Paper TRADE JOURNAL

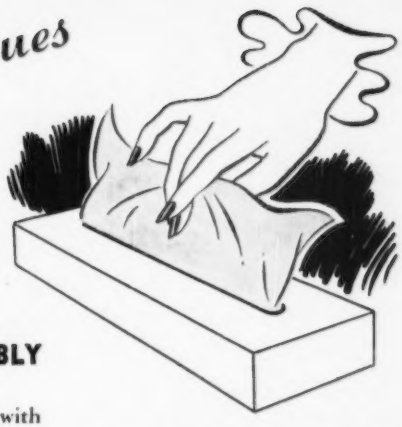
Oct. 26, 1950

CAN LEAD SOLVE YOUR CORROSION PROBLEMS?

HOW CAN HEAT TRANSFER BY RADIATION AID IN PAPERMAKING?

CAN SULPHATE PULP MILLS IMPROVE THEIR RECOVERY OPERATIONS?

For Facial Tissues



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COLORS THAT PERFORM DEPENDABLY

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Built to HOLD Grinding Speeds!

Five 3,500 hp, 11,200 volt, 257 rpm Allis-Chalmers motors driving *Roberts* Grinders in new Coosa River Newsprint mill, Childersburg, Alabama.

FOR CONTINUOUS, HIGH-SPEED grinding power, Allis-Chalmers motors were specified for five *Roberts* Grinders in this 100,000 ton capacity newsprint mill. These grinder-motor "teams" pay off with stone surface speeds up to 5000 ft per minute.

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Here's why you should use Allis-Chalmers synchronous motors for chipper, grinder, other heavy-duty mill drive jobs:

1. Welded steel stator yoke provides strength against deformation.
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3. Fan at each end forces air into core and out through yoke.
4. Ring-oiled bearings are dust-proof . . . special oil seals eliminate leakage from bearings or creeping of oil along motor shaft.

For *any* main or auxiliary drive or generator needs, you can get Allis-Chalmers motors or generators in all sizes ranging from 1 hp to the largest. Allis-Chalmers a-c and d-c motors — bracket-bearing, pedestal bearing or engine-type — are designed to give you long life with proved low maintenance. And be sure to look into "matching" controls for your needs.

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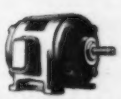
MILWAUKEE, WIS.


MOTORS

CENTRIFUGAL PUMPS

TEXROPE V-BELT DRIVES

ROTARY KILNS

HI-DENSITY FEEDER

STREAMBARKER

AND OTHER EQUIPMENT FOR PAPER MAKING . . .

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ALLIS-CHALMERS A-C ALLIS-CHALMERS

You CAN keep oil lines and bearings CLEAN

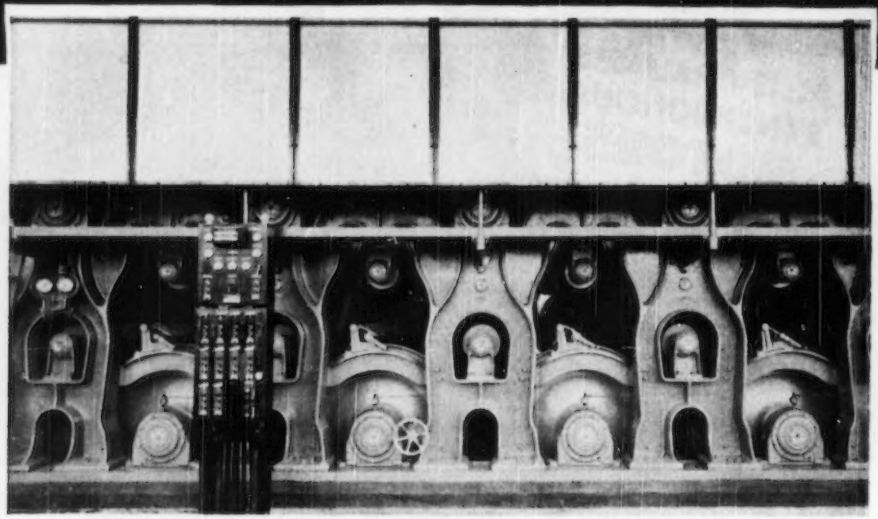

Photo courtesy Pusey & Jones Corporation

Use TEXACO URSA OIL X** —it cleans as it lubricates

As a bearing lubricant for your paper machines, *Texaco Ursa Oil X*** has no equal. It not only maintains its protective lubricating films under high operating temperatures, but keeps bearings and oil lines clean . . . assuring uninterrupted production and lower maintenance costs.

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Paper TRADE JOURNAL

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DATES TO REMEMBER

OCTOBER 30-31 NOVEMBER 1: 37th National Foreign Trade Convention, The Waldorf-Astoria, New York, N. Y.

NOVEMBER 2: Instrument Society of America, Hotel Bellevue-Stratford, Philadelphia, Pa.

NOVEMBER 3-4: Society of Rheology, Annual Meeting, Hotel New Yorker, N. Y.

NOVEMBER 27—DECEMBER 2: 19th National Exposition of Power and Mechanical Engineering, Grand Central Palace, New York, N. Y.

DECEMBER 3-6: American Institute of Chemical Engineers, Neil House and Deshler-Wallick Hotel, Columbus, Ohio.

JANUARY 15-18, 1951: Plant Maintenance Show & Conference, Public Auditorium, Cleveland, Ohio.

NEXT WEEK

For a very informative description of the various methods of handling pulpwood in the different pulp producing sections of the country, see "Improved Methods of Handling Pulpwood" by W. S. Bromley, Forest Engineer, American Pulpwood Association, New York, N. Y.

A comparison of operating and economic characteristics of double shell welded steel and single shell cast iron dryer rolls will be found in "Welded Steel Dryer Rolls" by Harry Fieberts, Development Engineer, Lukenweld Co., Coatesville, Pa.

Comprehensive illustrated descriptions of the most modern equipment and methods for combustion control on gas, oil or coal fired boilers are contained in "Increased Productivity Through Automatic Combustion Control" by Joseph A. Perry, Application Engineer, Republic Flowmeters Co., Chicago, Ill.

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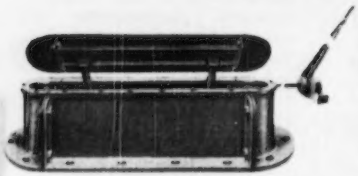
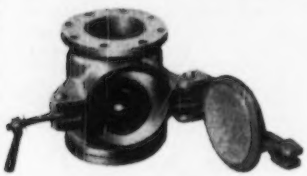
Outside operated beater dump valve.

Hook operated beater dump valve.

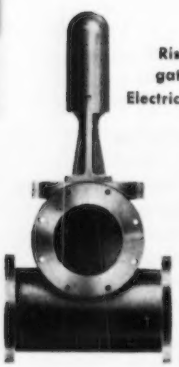


Oblong type beater dump valve.



Ball check valve.

Beater hydrant valve.

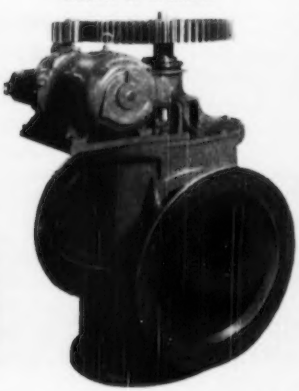


Pressure relief valve.

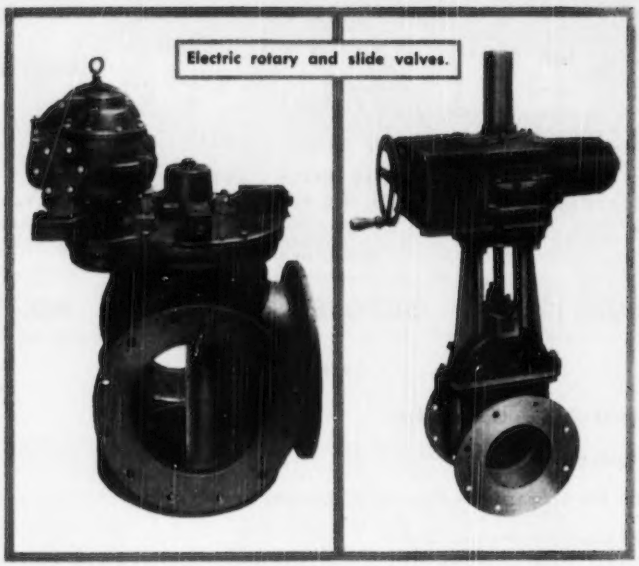
Rising stem gate valve. Electric or manual.

Non-rising stem gate valve. Electric or manual.

Hope type rotary valve. Electric or manual.



Slide valve. Electric, HYDRAULIC or manual.



VALVES

If it's valves you need, it's valves we've got—all kinds—all required capacities.

The Hope type electric rotaries in straight way, two and three way designs are finding homes in many a mill because they are *guaranteed* to operate—not stick and cause trouble.

We'd like to tell you more about this particular valve for remote control operation. What do you want to know?

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Dilts Machine Works, Fulton, New York
Divisions of The Black-Clawson Company, Hamilton, Ohio
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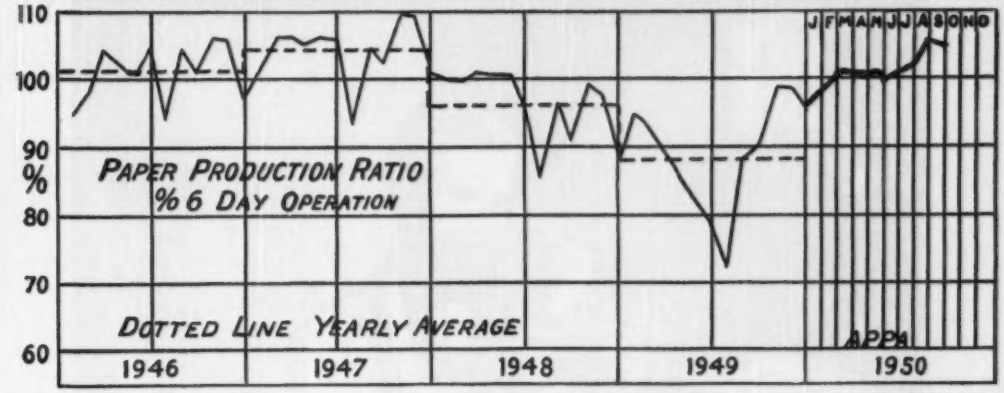
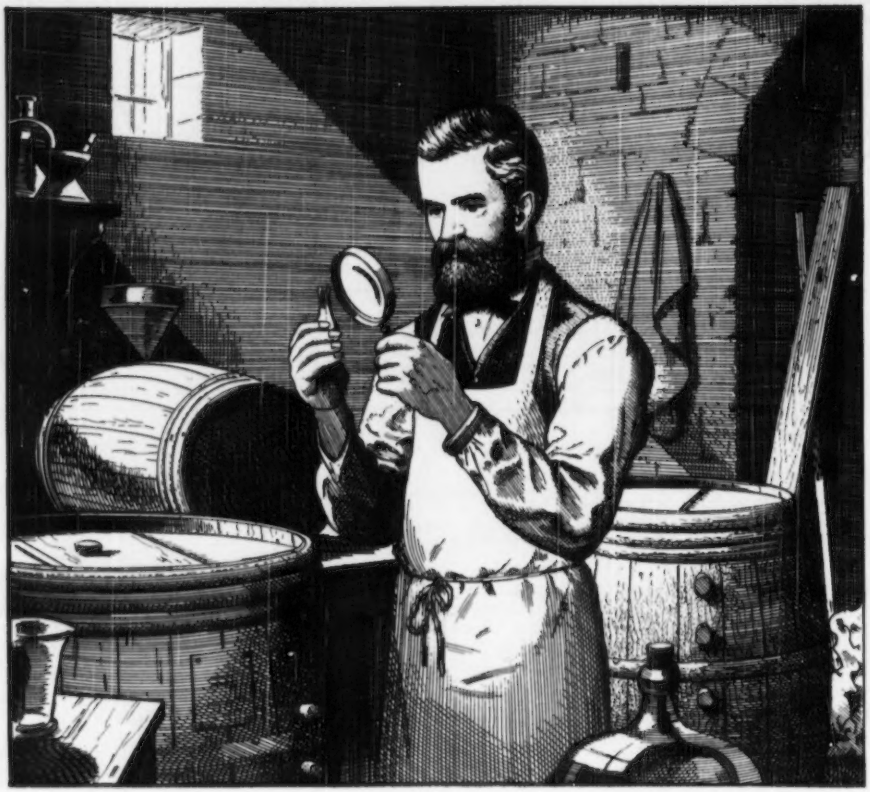
OUR BUSINESS



Source	Production	WEEK ENDING Oct. 14, '50	Sept. 16, '50	Oct. 15, '49
APPA	Paper Production percent 6-day Capacity	107.6	108.9	97.1
	Unbl. Kraft Paper Production percent	97.4	91.7	90.4
NPA	Paperboard Operating Ratio percent inch hours	102.0	100.0	94.0
		August 1950	**July 1950**	**August 1949**
APPA	Paper Production* (Except Newsprint and Building Papers) ....Tons	865,000	715,601	684,243
	New Orders ....Tons	979,000	916,770	719,898
	Unfilled Orders ....Tons	863,500	759,755	407,215
	Shipments ....Tons	873,500	723,040	679,984
		Sept. 1950	**August 1950‡**	**Sept. 1949**
NPA	Paperboard Production ....Tons	877,945	1,130,242	833,800
	New Orders ....Tons	872,012	1,365,968	873,002
	Unfilled Orders ....Tons	714,877	729,058	360,900
	Our Customers Activities Index[1]	**Latest Mo.°**	**Previous Mo.°**	**Year Ago°**
FRS	Manufactures Total Index	206	208	169
	Durable Mfg. Index	237	238	186
	Nondurable Mfg. Index	182	184	156
	Chemical Products Index	256	258	225
	Mfg. Food Products Index	172	164	172
	Printing and Publishing Index	150	169	133
ODC	Magazine Advg.-Printer's Ink Index	316	321	284
	Retail Sales Combined Adjusted Index	352.2	317.2	296.7
	Drug Index	225.3	222.0	233.8
	General Merchandise Group Index	368.7	310.3	285.6
	Grocery and Combination Index	410.9	378.9	358.0
	Prices Index			
BLS	Consumers Price Index[1]	172.5	170.2	168.5
	Wholesale all Commodities[2]	162.9	157.3	153.6
	Wholesale Foods[2]	171.4	162.1	161.3
	Commodities other than Farm Products and Foods[2]	151.5	148.8	145.1
	Wholesale Pulp and Paper[2]	159.1	155.6	156.8
	Purchasing Power of Dollar, Consumers Prices[1]	58.0	58.8	59.3
	General Activity Index			
FRS	Mfg. Production-Worker Payroll	362.2	348.8	315.7
	Unemployment Compensation Initial Claims (M)	971	1,104	1,383
	Miscellaneous Carloadings–Thousands of Cars	1,433	1,846	1,233
	Electric Output (Million KW hr.)	31,626	31,608	27,946
PTJ	Average 32 P & P Common Stocks as of Oct. 17	$35.26	$33.61	$28.62
	Average Indicated Dividends Common Stocks as of Oct. 17	$ 2.43	$ 2.30	$ 2.19

[1] 1935-39=100 Unadjusted Index
[2] 1926=100
* For details see APPA Monthly Statistical Summary—August 1950 Estimated Figures
° Latest Month Available on Request
‡ For Five Weeks



The Idea that Revolutionized Papermaking

In 1860 paper was still made almost exclusively from rags. The feverish search for a substitute went on. Then, in 1865 there flashed into the mind of Benjamin C. Tilghman, a Philadelphia chemist, an idea that was to revolutionize papermaking the world over. While experimenting in his laboratory, he noted that sulphurous acid attacked the wood in his barrels and vats, breaking down and softening the wood fiber. Others before him had observed this, but Tilghman saw what a chemical method of softening wood into pulp might mean to the paper industry.

In a small mill at Manayunk, Pennsylvania, he put his theory to practice, proved its success and was granted the first United States patent for manufacturing wood pulp by the sulphite process. Thus Tilghman became a pioneer in producing paper from wood, helped spur the growth of America's pulp and paper industry.

The dramatic story of paper is told in the sound-and-color film, "Paper — Pacemaker of Progress," and in a book under the same title. Both are presented by F. C. Huyck & Sons as a tribute to the Paper Industry. The book will be sent free upon request.

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KENWOOD WOOL PRODUCTS

HUYCK *Felts*

Paper TRADE JOURNAL

TRENDS

Office of the PAPER TRADE JOURNAL,
Wednesday, October 25, 1950.

Though rising newsprint prices are being spotlighted in the press, industry news centers about raw materials supply and prices, buying trends, and National Defense priorities and controls.

Finnish Strikes Settlements Progress

Signal news to the non-integrated portion of the industry came from Helsinki. Though fragmentary at press time, accredited sources state that a portion of the seven-week old strikes have been ended and workers started back to work on Friday morning, October 20. Wage agreements are reported to involve rises of six to ten percent. To press time, repair men were still out on strike and 10 pulp mills out of production for want of upkeep. Still others were on curtailed output. A further strike casualty is the pulp industry's sulfur supply.

New York rumors of new currency devaluation are said to be unfounded, that a revaluation has not been considered.

U. S. Consumers Hit

Cancellations and deferred shipments of contract tonnages have created distress points at U. S. consuming mills. With mill operations at capacity, inventories at a minimum (See Table I), and customers pressing for deliveries, these consumers have been forced onto the spot market for wanted tonnages of pulps and waste paper substitutes.

The woodpulp market is described as strong and firm with the major portion of mill requirements moving at contract levels.

Waste Papers Continue Climb

In steeper and steeper climbs, waste papers have at least one element of dizziness in them. Conservative dealers see in them a spectre of price controls but rationalize that "mills are bidding the prices up themselves."

Prices of used kraft bags, sugar and potato, are a case in point. Normally priced close to No. 1 brown kraft, today's quotations are some $10 to $15 above that grade. Induced by the Finnish cancellations particularly, spot prices for old kraft bags rocketed to $120 during the week. Wanted kraft envelope and new kraft cuttings are gone from the market.

Demand for hard whites is unabated, and wanted quantities are moving at asked prices.

Low bulkies — mixed, news and old corrugated — nosed upward again. Stimulated by mill buying, the Chicago market for *mixed* moved up $2 to $27, *news* to $30, corrugated containers up $3 to $38. Weakest market is in Boston which has been softened by the prolonged strike at Bird & Son. Here, too, *news* and *mixed* moved up $2 and $3 respectively.

Demand for *news*, old corrugated and high grades at Eastern mills is greater than in October, 1947, reports the Eastern Conservation Committee; and while demand for *mixed* continues to be heavy, board mills are consuming less by 20 percent than they did three years ago. Roofing and wallboard mills, however, are requiring more *mixed* than in 1947. During the first 40 weeks of 1950, Eastern mill receipts exceeded those of 1949's period by 16.4 percent, while consumption was 15.1 percent greater.

Usually considered by both consumers and suppliers of wastepaper as one of the year's most important months from the standpoint of both collections and consumption, this October appears to be no exception, says Director Colley S. Baker. "In fact, present indications are that it may equal October, 1947, the heaviest October for both collections and consumption in the industry's history."

General Newsprint Boost Seen

Announcement that Great Lakes had inaugurated a $10 price rise for newsprint, effective on November 1, following Abitibi and Powell River earlier moves, gave rise here and in Canada to the belief that a general rise is in the making, at least for Canadian tonnages. "As a result of these price boosts," writes the Journal's Ottawa correspondent, "speculation is currently upholding the view that a new general price pattern for Canadian newsprint is in the making, with basic Canadian price going from $96 to $106, and a ton of newsprint delivered in New York now costing approximately $110 instead of the previous $100. Prices in both countries vary somewhat by zones since the freight rates cause price differences for deliveries. In Canada, there also is an additional 8 percent sales tax levied against this product."

Threats of U. S. action through anti-trust regulations are not bringing any comments from Canadian newsprint producers, it is reported, particularly because costs of production in Canada have definitely advanced and some price adjustments upwards were contemplated long before this latest price increase was started. "No simultaneous price adjustment has occurred nor been contemplated, and each Canadian producer on its own has been concerned over higher production costs out of line with present prices. Consequently talk of anti-trust moves is being disregarded in paper trade circles in Canada. . . . It is no secret that Canadian suppliers have little choice but to raise prices now if their operations are to be on a reasonable profit-making basis," Ottawa reports.

Materials

Casein.—Market undertone somewhat easier as Argentine flush season gets underway. Demand lighter. Price drops 2 to 2½ cents.

Chlorine.—Post-strike operation slow in recovery due to cell corrosion. Shortage is critical. Major producer announces 33⅓ percent increase in production for chlorine and caustic soda in late 1951.

Fuel Oil.—Price rise of 15c per barrel for heavy oils effected as tanker rates rocket. Also expected are rises of 10c to 15c for light oils.

Rosin.—Heavy demand strengthens market. Price of H, I, K holds at $7.20; G climbs to $7.13.

Soda Ash.—Production getting back to normal, but spot buying at premium prices is still being reported.

Sulfuric Acid.—Price rise of 35c per cwt. follows crude sulfur advance.

Talc.—Output oversold by six weeks. No improvement seen probable.

Allyl Starch.—A new downward price revision announced. Attributed to increased sales, which makes possible a sliding scale reduction, the current revision lowers the price of single drums and drops the price of quantity shipments in toluene to 24 cents a pound. Also lowered to 28.75c is the tankcar price for alcohol solutions. Tankcar quantities of 40 percent solids solution or the resin in toluene is 24c; in single drums, 26.75c. An unsaturated either of starch formed from starch and the petroleum derivative, allyl chloride, the starch is used for paper coatings, adhesives, lacquer type finishes, etc.

— E. P. N.

WOODPULP: U. S. PRODUCTION, CONSUMPTION, INVENTORIES, AUGUST, 1950

(Tons of 2,000 pounds)

Grade	U. S. Production: Tons	U. S. Production: % of Base	Consumption in paper & board manuf.	End of Month Inventories: At pulp mills, for later sale	End of Month Inventories: At paper & bd. mills: Aug.	End of Month Inventories: At paper & bd. mills: July*
Total	1,304,432	91.4	1,443,496	24,143	423,674	425,526
Sulfite, Total	248,941	86.4	289,778	15,531	192,679	206,011
Blchd. Total	187,655		179,301		90,844	94,344
Dissolving	43,775		3,098		10,296	9,700
Softwood	134,263		164,919		76,603	80,382
Hardwood	9,617		11,284		3,945	4,262
Unblchd.	61,286		110,477		101,835	111,667
Sulfate, Total	658,235	98.5	725,499	3,227	176 869	164,405
Blchd. Total	117,293		155,161		82,654	79,266
Semi-blchd.	32,281		35,274		4,994	6,166
Unblchd.	508,661		535,064		89,221	78,973
Soda	47,362	90.7	51,755	n.a.	13,884	15,437
Groundwood	193,467	80.0	221,004	409	34,480	34,245
All Others	143,069	88.3	155,460	n.a.	n.a.	n.a.

Based on Bureau of Census figures. n.a.—not available. * Revised.

Paperboard Production (Tons)*

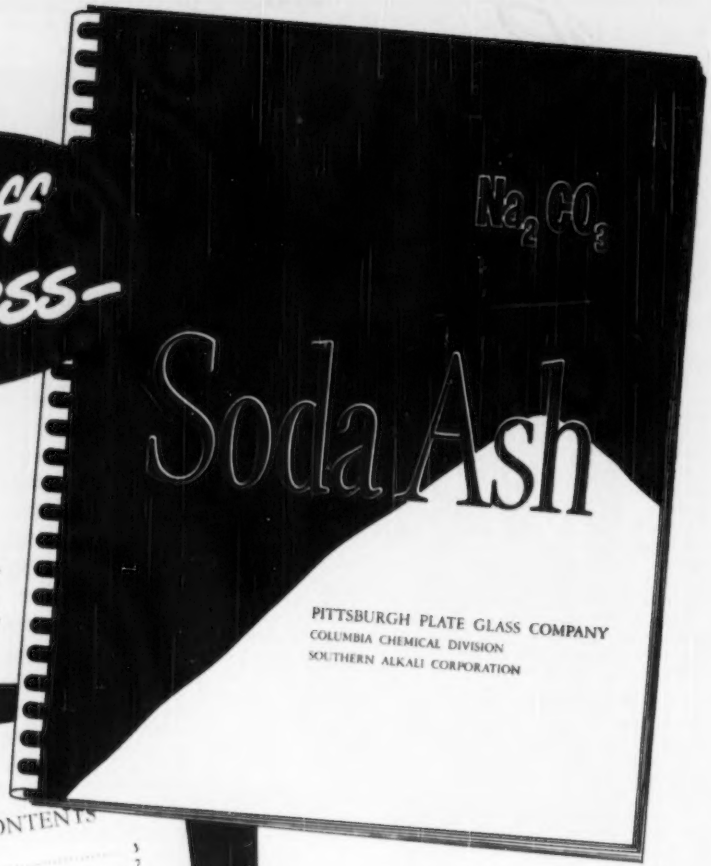
	Oct. 14 1950	Oct. 7 1950	Oct. 15 1949
Production	237,498	231,663	208,450
New Orders	231,419	281,869	191,375
Unfilled Orders	752,556	763,679	422,552

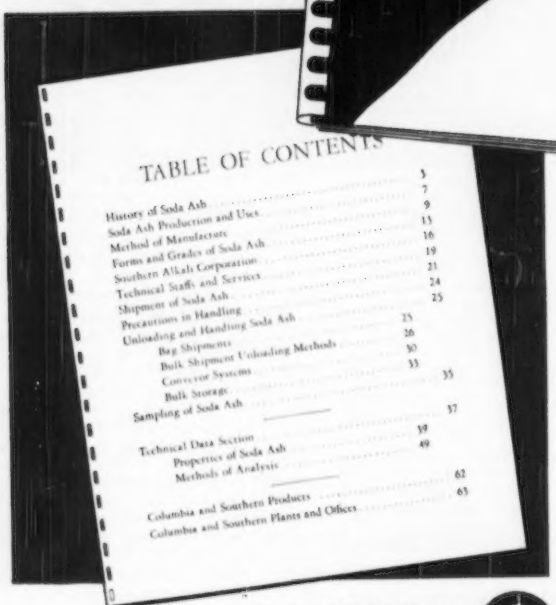
Source: NPA.

Just off the press—

The latest handbook on SODA ASH— and the most complete ever published!

. . . . By the Technical Staffs of Pittsburgh Plate Glass Company, Columbia Chemical Division; and Southern Alkali Corporation.

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Columbia and Southern Plants and Offices 63

This completely new, authoritative 64-page illustrated manual is now available without charge to Soda Ash users throughout industry and to others whose work involves Soda Ash.

Write on company stationery to the Pittsburgh Plate Glass Company, Columbia Chemical Division, Fifth Avenue at Bellefield, Pittsburgh 13, Pa.

COLUMBIA CHEMICALS

CHICAGO • MINNEAPOLIS • BOSTON
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PITTSBURGH PLATE GLASS COMPANY

News of the Week

Paper TRADE JOURNAL

ABITIBI PRICE RISE

Abitibi Power & Paper Co., Ltd., has announced to their customers that their contract price for standard newsprint paper will be increased $10 a ton effective November 1, 1950.

ANPA OPINION ON PRICE RISE

Cranston Williams, General Manager of the American Newspaper Publishers Assn. has made the following statement:

The American Newspaper Publishers Assn. is being asked by an overwhelmingly large number of United States newspaper publishers whether the increases of $10 per ton on newsprint by Powell River and Abitibi are to be made by other North American producers.

Our answer is that we believe an increase of $10 is not justified by any factors today that would go to support the increase to $111 per ton base price.

While contracts are made between mills and publishers, the ANPA believes a $10 increase is precipitate, excessive, unwarranted and ill-timed.

We hope each manufacturer will analyze his own situation individually and conclude that an increase is not necessary.

It is the responsibility of each buyer to tell his supplier what he thinks about this increase of $10.

There is a limit to the amount of money a newspaper can pay out and stay in business.

ANOTHER NEWFOUNDLAND MILL

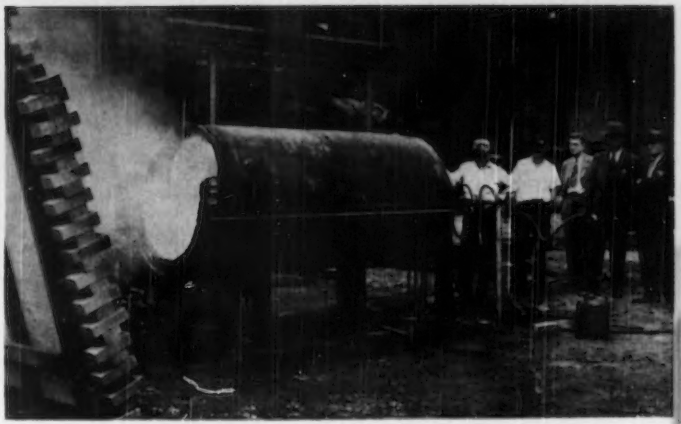
OTTAWA—The Power Corp. of Canada is surveying five large rivers on the south coast of Newfoundland in an all-out development. It is understood that enough hydro-electric power may be found so that a paper mill could be established in that area of Newfoundland and raw materials served to it from the stands in Labrador.

S. D. WARREN IMPROVEMENTS

BOSTON—S. D. Warren Co. expects to complete a $3,500,000 expansion and improvement program at its Westbrooke, Me., mill.

It is installing a $2,250,000 bleach plant and spending $1,250,000 for other equipment. The new equipment will improve the quality of its pulp as well as reduce costs through improved efficiency, and bring operations at the mill into better balance.

The newest expenditures will bring to $11,500,000 the total spent by the firm for new facilities since the end of World War I.



BURNING SULPHITE LIQUOR

The special pilot-plant furnace built this summer by Northern Paper Mills at its Green Bay plant for experiments in burning spent sulphite liquor as industrial fuel was used October 15 in its first full-scale test . . . Sulphite liquor, atomized with steam, feeds into the furnace under high pressure, scientific instruments measure the heat produced, and the fiery blast of the experimental flame is directed against a fire proof brick wall. Purpose of the unit is to preheat the concentrated sulphite liquor, after its evaporation to a 50 percent solids form, so that its 50 percent water content will not extinguish the fire, and thus will allow the solids in the liquor to burn.

PROPOSED ST. REGIS MILL

NEW YORK—St. Regis Paper Co. has announced the acquisition of an option on a property at Jacksonville, Fla., as a possible site for a new pulp and paper mill.

When and if this mill is constructed, the company states, it will form part of a program of expansion in the southeast which the management has had under consideration during the past several years. To that end a number of possible sites have been examined.

In anticipation of such a program, which has as its goal complete integration — that is, from wood to end product — the company has fortified itself with a long-term supply of wood resources in the south, consisting of some 450,000 acres.

Of this acreage, over 200,000 acres are located in Florida and Alabama, well situated for use in the company's large integrated kraft operation at Pensacola, Fla. In addition, St. Regis acquired in 1947 the right of management and utilization of 218,000 acres of longleaf slash pine in Georgia's famous Suwanee Forest. This latter tract, under the management of the Superior Pine Products Co., has long been recognized as an outstanding example of the insurance of perpetual growth through forest management.

At Pensacola, the company's present installations of pulp and paper equipment have a capacity to produce some 150,000 tons of kraft paper and board annually. A substantial portion of the kraft output at that center is converted by the company into multiwall bags. The new mill, if proceeded with, it is indicated, will add some 100,000 tons annually to the company's outturn of kraft paper in the South.

NEW BLEACH PLANT

OTTAWA — Saint John Sulphite Ltd., Fairville, N. B., plans to install a new bleach plant which will increase the mill capacity to approximately 40,000 tons a year. The company recently acquired 13,003 acres of timber lands in the State of Maine.

PLAN NEW ONTARIO MILL

OTTAWA—It is understood the erection of a modern paper mill in the Sioux Lookout district of Ontario is presently being studied by interested parties. The Newlund area immediately south of the town of Sioux Lookout is being mentioned in this regard. No other details are available at the moment.

PULPWOOD PROCUREMENT

WASHINGTON — Pulpwood totaling nearly $3 million in value was authorized this week by ECA for procurement in Canada, for export to France under the European aid program.

The authorization totals $2,800,000 and was for an unspecified quantity to be delivered between October 31, 1950, and February 28, 1951.

In addition, the agency authorized other purchases as follows:

Pulp, paper or paper products, to be purchased in Japan, and totaling $6,000, for export to Indo-China, between October 18, 1950, and February 28, 1951.

FLOOD CONTROL ALLOCATION

NORTH ADAMS, Mass. — Word was received here that Army engineers have announced an allocation of $595,000 for flood control work in this city and Adams.

During the present fiscal year, $245,600 will be spent on a project in Adams and $345,000 for similar work in North Adams.

However, the allocation is less than the original request of officials of the two communities. They sought $500,000 for each of the two Berkshire County projects.

Spokesmen for the Army engineers explained that an across-the-board slash by Congress is responsible for the smaller appropriations. Application of the reduction was left to the engineers.

Letter To Editor

THE SHERWIN-WILLIAMS CO.
OF GEORGIA
Textile and Industrial Maintenance Department
224 West First Street
Charlotte 1, N. C.

October 10, 1950

Lockwood Trade Journal
Company, Inc.
15 West 47th Street
New York 19, New York

Gentlemen:

Please send me four copies of your issue of August 24, 1950. If these are not available and you have reprints of the article by Mr. L. S. Oyster of the Du Pont Company concerning the painting of paper factories, we would like to buy a few copies. This type of technical information is of untold help to the industry which it covers, and we are pleased to see you carry items of this kind.

Yours very truly,

The Sherwin-Williams Company
(Signed) E. H. Steger, Manager

It was also announced that $12,000 will be spent on the Knightsville Dam a reservoir used for storage purposes in connection with flood control.

SEPTEMBER NEWSPRINT REPORT
NEWSPRINT ASSOCIATION OF CANADA, MONTREAL

I. PRODUCTION AND SHIPMENTS in short tons: 2000 pounds.		SEPTEMBER 1950	SEPTEMBER 1949	SEPTEMBER Percent Change	YEAR TO DATE 1950	YEAR TO DATE 1949	YEAR TO DATE Percent Change
1. Canadian Production: including Newfoundland	month and year to date	437,579	415,179	+ 5.4	3,934,848	3,889,038	+ 1.2
	per working day	17,573	16,674	+ 5.4	17,064	16,865	+ 1.2
	percent of capacity	103.2	100.4		100.2	101.6	
2. Canadian Shipments: including Newfoundland	to United States	417,537	367,668	+13.6	3,511,730	3,235,448	+ 8.5
	to Canadian Consumers	36,132	27,983	+29.1	264,528	249,146	+ 6.2
	to Other Markets	31,496	42,007	—25.0	142,639	351,070	—59.4
	total: all markets	485,165	437,658	+10.9	3,918,897	3,835,664	+ 2.2
3. U.S. Production:	month and year to date	84,564	70,600	+19.8	744,374	684,194	+ 8.8
4. U.S. Shipments:	to U.S. Consumers	83,013	68,043	+22.0	734,222	668,115	+ 9.9
	to Other Markets	949	1,571	—39.6	11,669	9,860	+18.3
	total: all markets	83,962	69,614	+20.6	745,891	677,975	+10.0
5. U.S. Imports from Europe:	*estimate; see Table 8	*17,000	18,026	— 5.7	*129,199	211,002	—38.8

II. CONSUMPTION AND STOCKS in short tons: 2000 pounds.		SEPTEMBER 1950	SEPTEMBER 1949	SEPTEMBER Percent Change	YEAR TO DATE 1950	YEAR TO DATE 1949	YEAR TO DATE Percent Change
6. U.S. Consumption:	estimated total	485 439	463,023	+ 4.8	4,304,834	4,035,200	+ 6.7
7. North American Stocks:	U.S. Consumers	679,124	698,722	— 2.8	679,124	698,722	— 2.8
	Canadian Mills	137,141	162,569	—15.7	137,141	162,569	—15.7
	U.S. Mills	9,297	15,165	—38.7	9,297	15,165	—38.7
	estimated total	825,562	876,456	— 5.8	825,562	876,456	— 5.8
8. A.N.P.A. Report, 525 Newspapers	Consumption	373,788	356,528	+ 4.8	3,314,722	3,107,104	+ 6.7
	Stocks (tons)	467,214	529,668	—11.8	467,214	529,668	—11.8
	Stocks (days)	37	45		37	45	

FIGHTING PAPER WANTED

Invitation for bids has been issued by the New York Quartermaster Procurement Agency, 111 East 16th street, New York 3, N. Y., on QM-30-280-51-557, covering Item 1—Paper, Cross Section, Printed, Drawing, Engraved Green (Metric) 18x25 Cm, 5mm lines, Accented Cm Lines Heavy, Sheet Size 8½″x11″, 50 Sheets to the Pad, 300 Pads; Item 2—Paper, Drawing, Unmounted, White, Highest Grade, Slightly Grained Surface, Medium Weight, 30″ Width, 10 Yards Per Roll, 1000 Rolls; Item 3—Paper, Tracing, White, Rag, Transparentized, Slightly Grained Surface, Basis 17x22 — Less Than 30 Lbs./1000, 30″ Width, 30 Yards Per Roll, 150 Rolls. Bids will be opened November 15, 1950, at 11:00 A.M. (EST) at the New York Office. Delivery Schedule: To be completed as soon as possible. This procurement is for the U.S. Marines.

QM-30-280-51-526, covering Items 1, 2 and 3—Insulation, Electrical, Sheets (Paper) Pressboard. Dielectric Strength, 300 Volts Per Mil., Furnished in Flat Sheets, 30″x36″ Minimum, 36″x42″ Maximum; .060 Thickness, 2.66 Sq. Ft. Per Lb.; and .125 Thickness, 1.33 Sq. Ft. Per Lb., 1,450 Pounds; and Items 4, 5, 6, 7, 8 and 9 —Insulation, Electrical Sheets (Paper) Slot-Cell Class 0-Maximum Operating Temperature, 90°C. Type R is a Tough, Strong Dense Paper Made From 100 per cent Selected Cotton Rag Stock, Not Chemically Treated. It is Furnished in Sheets, Form S, 36″x36″ (various), 2434.39 pounds. Bids will be opened November 13, 1950, at 11:00 A.M. (EST) at the New York Office. Delivery Schedule: November 30, 1950. This procurement is for the U.S. Navy.

QM-30-280-51-583, covering Item 1 — Paper, bristol index, chemical wood, bleached, rosin-sized, substance 140. Size 25½ x 30½″, single ply, color white, 40,000 sheets; Item 2 — Paper, duplicator, copy, liquid process, chemical wood, substance 20, sizes 8½x10½″ and 8½x14″, 100,000 reams.

Bids will be opened November 20, 1950 at 2:00 p.m. (EST) at the New York office. Delivery schedule: November 1 – December 1, 1950. This procurement is for the U. S. Navy.

RULE OUT UNION

WILMINGTON, Del.—Employes of the Fibre Specialty Co. at Kennett Square, Pa., a subsidiary of the National Vulcanized Fibre Co. here, voted 53 to 36 on October 19 against the installation of a union in the plant.

The election of employes, conducted by the National Labor Relations Board at the request of Union Local No. 144, United Electrical, Radio and Machine Workers of America, was held to determine whether there should be a union at the plant. All of the employes voted except four who were ill.

The election was conducted by John A. Weston of Philadelphia, a representative of the N.L.R.B.

For *BEST* performance from your Stainless Steel equipment . . .

COVER LINER, top strainer, top sleeve, valves and piping of this big digester are Stainless Steel. The equipment is installed at the South Brewer Pulp Mill of the Eastern Corporation, Bangor, Me.

you must use the grade of Stainless *BEST* suited to the job

WALK THROUGH a modern paper mill. It's like walking through a display room of Stainless Steel. For seldom will you find Stainless used in more different forms and in more different *analyses* than in paper making.

You'll see one grade of Stainless Steel used in the sheets for digester linings. Other grades in the Stainless pipe and tubing heat exchangers, evaporators and cooking liquor lines. Still other analyses of Stainless in the long-wearing plates for blow-pit bottoms, in the tough bars for Jordan machines, in the wire and rods that go into cylinder molds, pulp washer rolls and save-alls.

And because conditions vary from mill to mill—due to the different acid concentrations, temperatures, pressures and operating procedures used—even similar applications often call for entirely different types of Stainless Steel. Always, the type of Stainless used is determined by the job it has to do.

That's why it is important to use *U·S·S* Stainless Steel—and to get the assistance of our Stainless Steel engineers in its selection.

The fact that U·S·S Stainless Steel—a perfected, service-tested material—is available in many different analyses and in the most complete range of forms, sizes and finishes, makes it possible for us to give you *exactly* what your operating conditions call for.

In this way you can be sure of getting the *maximum* return from your investment in Stainless Steel construction—top performance from your equipment, longer service life, low maintenance and fewer replacements. It will pay you to bring your requirements to Stainless headquarters.

THIS BLOW-PIT BOTTOM, covering a 450-square foot area, is constructed of perforated Stainless Plates. Many of these plates have been in use at the South Brewer Mill for 16 years without showing appreciable signs of wear.

AMERICAN STEEL & WIRE COMPANY, CLEVELAND · CARNEGIE-ILLINOIS STEEL CORPORATION, PITTSBURGH
COLUMBIA STEEL COMPANY, SAN FRANCISCO · NATIONAL TUBE COMPANY, PITTSBURGH · TENNESSEE COAL, IRON & RAILROAD COMPANY, BIRMINGHAM
UNITED STATES STEEL SUPPLY COMPANY, WAREHOUSE DISTRIBUTORS, COAST-TO-COAST · UNITED STATES STEEL EXPORT COMPANY, NEW YORK

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U·S·S STAINLESS STEEL

SHEETS · STRIP · PLATES · BARS · BILLETS · PIPE · TUBES · WIRE · SPECIAL SECTIONS

D-1011

UNITED STATES STEEL

CHAMPION WINS 3rd OSCAR

Champion Paper & Fibre Co. was judged as having the best annual report of the pulp and paper industry in the Survey of Annual Reports for the Financial World. This is the third year Champion has received this honor. Pictured are the Champion staff members who prepared the prize winning report. Standing: R. C. Skillman, assistant director of public relations; Robert C. Haynie, director of management planning; Henry Rigby, assistant to the president. Seated: Homer L. Dillard, controller; Dwight J. Thomson, vice-president and director of industrial and public relations and Carroll L. Wilson, director of finance.

FORM BOOK PAPER ASSN.

DOVER, Del.—Book Paper Manufacturers Assn., Inc., has been chartered by the corporation department of the Secretary of State's office here to promote the book paper industry. Registrar and Transfer Co., Dover, Del., is serving as the principal office.

REJECT BIRD PROPOSAL

NORWOOD, Mass.—By a vote of 1064 to 49, striking employes of Bird & Son, Inc., mills at Norwood, East Walpole, Mass., and Phillipsdale, R. I., at a mass meeting held on October 20, turned down a 14-point proposal of the management to return to work which included a 5-cent-per-hour increase in pay, to become effective on January 1.

The employes have been out on strike for seven weeks after negotiations to settle their differences failed and the five unions involved called a strike.

At a meeting held October 16, the management offered their 14-point proposal for the settlement of the strike, but the union negotiators countered with a firm demand that their proposal of a 5-cent-an-hour increase be effected immediately on their return to work and an additional 5 cents in 60 days.

BARRETT MOVES

NEW YORK—Thomas Barrett & Son have sold the building at 402 West Broadway on the corner of Spring street and will move shortly to 423 Broome street.

PEOPLE

BROWN CO. has announced the appointment of A. E. Penney, now superintendent of operations and maintenance at the La Tuque Kraft Pulp Mill, as assistant to the works manager. Mr. Penney will assume his new duties the latter part of November assisting the works manager in the operation of the pulp and paper divisions of the company in Berlin.

DOESKIN PRODUCTS, INC., announced the appointment of John D. McCrystle as general plant manager in charge of Doeskin's three mills. Mr. McCrystle rose through the ranks of the Brown Co. starting, after his graduation from the University of Maine in 1932, as a laborer and becoming manager of manufacturing in 1939. His most recent post was first vice-president of the Upson Co., Lockport, N. Y.

MAC SIM BAR PAPER CO.'S superintendent, Walter F. Wolfe, recently underwent amputation of his left hand just above the wrist. The amputation was made necessary because of an injury he had sustained while working upon a paper machine. Mr. Wolfe, at present, is hospitalized in the Walter Crispe Hospital, Plainwell, Mich.

NATIONAL GYPSUM CO. has announced the promotion of Leonard L. Hank to production manager of all the firm's mills. Mr. Hank was formerly manager of the Kalamazoo plant of the firm. He will set up his headquarters at the main office of the company in Buffalo, N. Y. Fred L. Buchanan, formerly with the Waldorf Paper Products Co., St. Paul, Minn., has been named to succeed Mr. Hank.

UNITED STATES ENVELOPE CO.'S chief clerk, Evert M. Anderson, has been promoted to the office of manager of the newly-constructed Southwest division of the concern in Dallas, Tex. He was feted by company officials and co-workers at a dinner party in Toto's, Holyoke, on October 17.

STRATHMORE PAPER CO.'S Advisory Council elected six new members to take the place of those who are retiring from the council. The new members are W. E. Snyder, Baltimore Paper Co., Baltimore, Md.; L. V. Mulnix, Sr., Carpenter Paper Co., Grand Rapids, Mich.; L. L. Ferry, Sloan Paper Co., Atlanta, Ga.; Carl Stuyvesant, The Alling & Cory Co., New York, N. Y. S. T. Jones, Sr., Hudson Valley Paper Co., Albany, N. Y., was re-elected for a two-year term. He had just served a one-year term in place of a member who had resigned. Arthur W. Towne, Blake, Moffit & Towne, San Francisco, Calif., was re-elected for a two-year term. Courtney Reeves, Carter Rice & Co. Corp., Boston, was elected chairman of the Advisory Council for the coming year.

The Strathmore Advisory Council is composed of twelve members representing the 140 distributors of Strathmore papers throughout the country, together with the immediate past chairman of the Advisory Council.

RIEGEL PAPER CORP. has appointed Howard A. Stone sales manager of the Riegel Upper Mills, it was announced by John L. Riegel, president. Mr. Stone will head the sales of all industrial specialties and printing papers produced by the Riegel Mills at Warren Glen, Riegelsville and Hughesville, N. J.

Mr. Stone has been with Riegel since 1924, when he joined the company as advertising manager. For the past several years he has been New England sales representative.

HOWARD A. STONE

*UNIFORMITY

Under all conditions the proved performance of Tycol lubricants more than meets their recommended service.

Rigidly controlled and tested during manufacture . . . and refined from the highest grade crudes, Tycol oils and greases are known for their *UNIFORMITY within each classification — from the first drum to the last.

This unvarying high quality, plus the scope of the line, accounts for Tycol's wide acceptance by industry interested in maximum production . . . top efficiency . . . lowest operating cost.

Whatever your lubrication need, let a Tide Water Associated engineer help you select the one suited for your particular need. Call, write or wire your nearest Tide Water Associated office for full details.

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INDUSTRIAL LUBRICANTS

Boston • Charlotte, N. C. • Pittsburgh • Philadelphia • Chicago Detroit • Tulsa • Cleveland San Francisco • Toronto, Canada

TIDE WATER ASSOCIATED OIL COMPANY

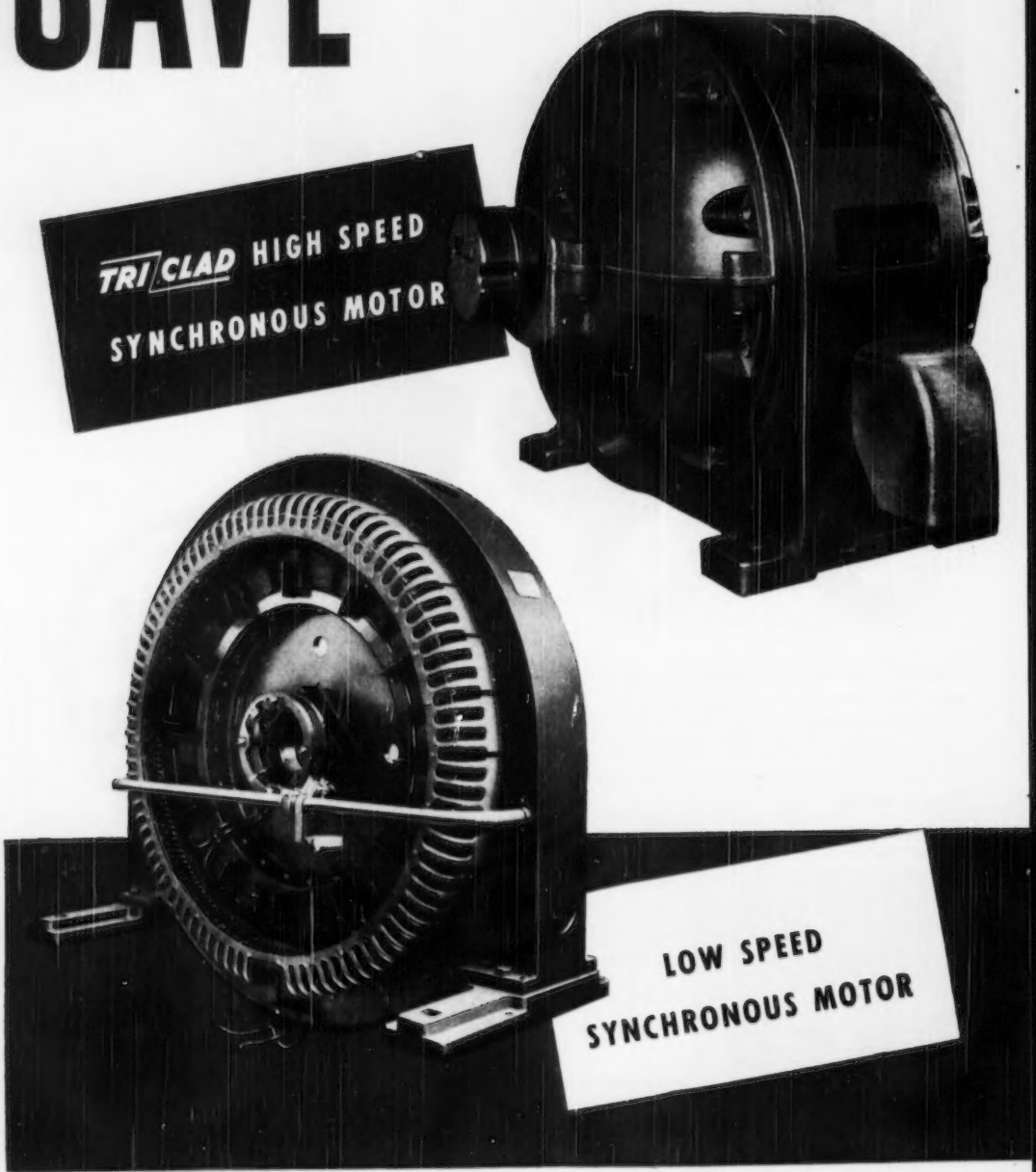
17 BATTERY PLACE · NEW YORK 4, N.Y.

*LEARN WHAT THIS PRODUCT CHARACTERISTIC MEANS TO YOU — READ "LUBRICANIA"

This informative handbook, "Tide Water Associated Lubricania," gives clear, concise descriptions of the basic tests used to determine important properties of oils and greases. For your free copy, write to Tide Water Associated Oil Company, 17 Battery Place, New York 4, N. Y.

REFINERS AND MARKETERS OF VEEDOL — THE WORLD'S MOST FAMOUS MOTOR OIL

SAVE ON POWER BILLS



SYNCHRONOUS MOTORS

SYNCHRONOUS MOTORS IMPROVE POWER FACTOR

1. **Save you penalty charges for poor power factor**

2. **Save money by reducing demand and releasing needed generating capacity**

Here's an example:

One company improved power factor from 72 to 84 per cent by installing a 300 hp .8 leading power factor G-E synchronous motor in place of another motor. This corrected power factor released 260 kva capacity in their generating equipment and allowed installation of additional motors.

These savings in cost of operation are available to you.

Savings in the initial cost of equipment are also available—when synchronous motors are used in their natural fields of application. To find out about these natural fields of application, get in touch with our nearest office.

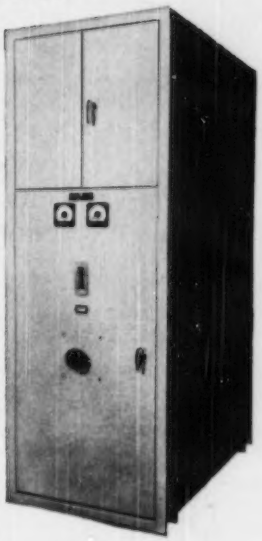
REMEMBER—General Electric Synchronous motors—whenever you need constant speed. They can give you lower initial cost, lower operating cost. For bulletin information, fill in the coupon:

G-E SYNCHRONOUS MOTOR CONTROL INCREASES YOUR SAVINGS

G-E synchronous control provides the accurate adjustments that enable you to improve power factor. Here's where details count—where the slightest variation of a pointer on a meter means money saved—or lost. And General Electric has not overlooked these elements. Consider the meters for a moment. Here, G-E has devised a long scale with the pointer in the same plane as the figures so there can be no possibility of misreading the instrument. Anti-glare glass is used so no distortion is possible.

The new smaller rheostat, too, has design features that not only result in longer life but in greater operating convenience and accuracy. The handle has been molded to fit the fingers of the operator—to prevent slippage and over correction. You can be sure, too, that the new field circuit will respond instantly to rheostat adjustment.

Protection is assured the operator through the attractive steel enclosure. The cabinet resists blows, keeps out dirt and other operating hazards. All live parts are strongly guarded. Plant appearance is improved with this control designed to line up with other G-E power units such as switchgear. Ask your nearest G-E office for more information about this equipment that safeguards your investment . . . helps save operating expenses.



Apparatus Dept., Sec. 9770-6
General Electric Co., Schenectady, N. Y.

Gentlemen:

Please send me: ☐ GEA-5332, Low-speed Synchronous Motors; ☐ GEA-5426, High-speed Synchronous Motors; ☐ GEC-505, Synchronous Motor Control.

Bulletins needed for:

☐ Reference purposes ☐ Planning immediate project

Name .....

Position .....

Address .....

City ..... Zone ..... State .....

Corrosion—V of Series

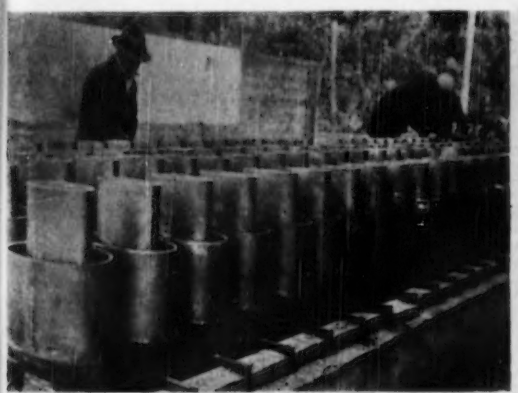
The Use of Lead in the Pulp & Paper Industry

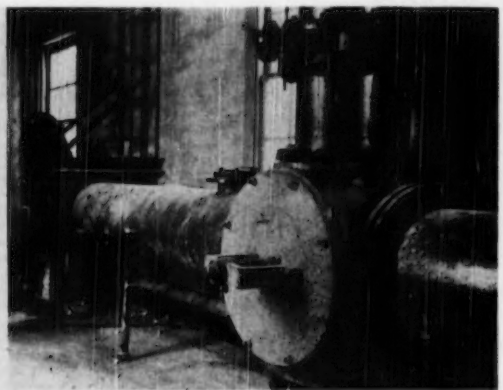
VANCE P. EDWARDES[1]

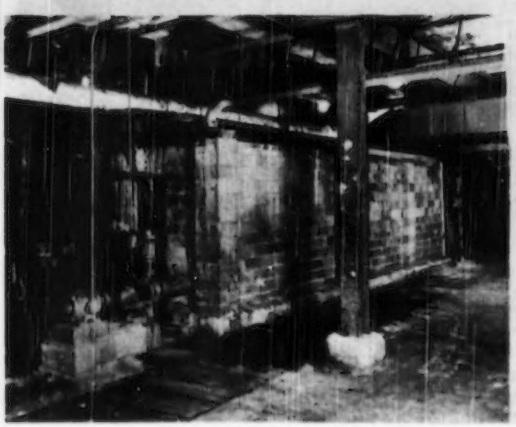
For certain operations, lead is of vital importance to pulp and paper, particularly in the production of sulphite pulp. It is probable that the development of sulphite pulping would have been seriously delayed had not lead, with its corrosion resisting properties, been available.

[1] Consultant to the Pulp & Paper Industry.

As with any material of construction, the physical as well as the corrosion resisting qualities of lead must be considered in deciding the use to which it can be put. Lead can be used at reasonably elevated temperatures but, if cyclic temperatures are involved, proper fastening and supporting measures should be taken. Homogeneous lead lined equipment in which the lead is bonded directly to the steel can also be used for higher temperatures. To illustrate, lead pipe is frequently used at 100 psi. pressure at 70° F. and at 50 psi. steam pressure at 300°F. For greater strength requirements, the lead pipe is reinforced with steel or copper sheet. Lead has the valuable property of resistance to sulphuric and sulphurous acids in concen-







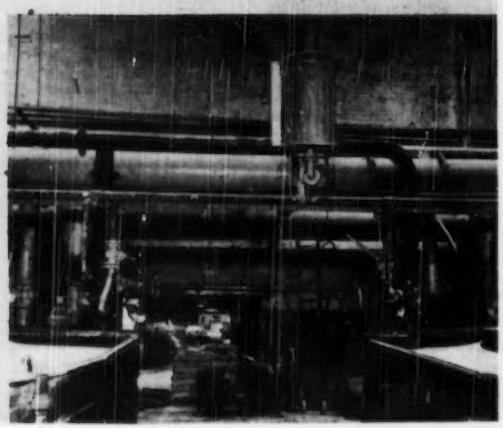


Figure 2. (Upper left) Top of elliptical antimonial lead pipes in gas cooler unit showing water seal lead jackets. The water seals measure 10-inch by 5-inch with a 3/16-inch wall. Figure 4. (Upper right) 20-inch fabricated lead piping. 20-inch four-way gas plug cock. 20-inch cast lead damper. Installed in 1925 and still in use. Figure 6. (Lower left) Liquid alum storage tank lined with 10-lb. antimonial lead. Alum at 40 percent concentration enters and is pumped out through 3-inch lead pipe supported in angle iron suspended from overhead. 18,000-gallon capacity. Figure 8. (Lower right) 30-gallon liquid alum measuring tank, 10-lb. antimonial lead lined steel. Alum enters from above through 3-inch lead pipe and is fed to the beaters below by pipe of the same size. Lead pipe is supported in angle iron.

trations and under conditions encountered in the sulphite mill. It is also excellent for handling alum solution and in the bleaching of groundwood by the zinc hydrosulphite method.

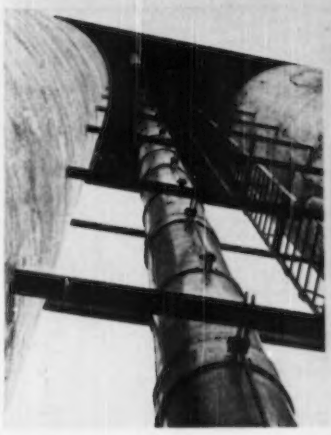
Sulphite Acid Manufacture

The sulphite process starts with the production of an acid composed of the desired proportions of free sulphurous acid and an alkaline bisulphite, usually calcium. Dry sulphur is burned to form sulphur dioxide, cooled and passed into towers filled with limestone which are showered with controlled amounts of water. While theoretically possible to secure a gas of nearly 20 percent concentration, in practice it is impossible because the excess air present, together with small amounts of moisture in both the sulphur and air, favor the formation of sulphuric acid. Temperature also plays a part in conversion of sulphur dioxide to the trioxide, hence the necessity of cooling the gas as rapidly as possible through the critical temperature range. As long as the gas temperature is above the boiling point of sulphuric acid, iron piping is satisfactory but when the temperature is sufficiently reduced, sulphuric acid mist forms. Normally the temperature of the combustion chamber is 2000 degrees F or above.

Depending on the length of piping between the combustion chamber and cooler, and the ambient temperature, gas enters the distributing header over the cooler at about 1400 degrees F. In order to permit proper absorption of the gas in the acid making towers, it must be cooled to 90 to 100 degrees F. It is in this cooling step that lead, because of its resistance to sulphuric acid, lays such an important part. The gas is distributed to a number of lead pipes, usually 8 inch diameter with ¼ inch wall and about 15 feet long, submerged in a pond of cooling water. These in turn discharge into a submerged lead header to which are connected a multiplicity of vertical elliptical lead pipes, 3 by 8 inch, ¼ inch wall and about 15 feet high, such as those illustrated in *Figures 1* and *2*. The elliptical lead pipes are individually connected at top by a short section of lead pipe to a second set of vertical elliptical piping leading to a second submerged header, thence to a third set of similar piping and finally to the fourth set which is connected to a header leading to the gas fan. All the cooling water, before entering the pond, is distributed in such a manner at the top of the vertical piping that a film covers the entire surface. Thus the gas gets a preliminary cooling in the submerged lead pipes and final cooling in the four passes of the vertical elliptical piping. The sulphuric acid condensed in the cooler is trapped out from each of the submerged headers but is not completely removed from the gas.

Of recent years, tellurium lead as well as antimonial lead has been used for cooler piping. When occasional difficulties do arise with lead it is generally due to improper installation or poor lead burning. Too often the lead rods used for burning are not kept clean and the burning itself done so poorly that the lead is only stuck together.

Previous mention was made of the gas fan. This is used to pull the gas through the burner, combustion chamber and cooler and force it up the acid towers. A few inches of water vacuum and pressure respectively is sufficient. The fan bowl is cast antimonial lead, split horizontally to permit cleaning; the impeller either cast lead blades or lead covered iron and the shaft steel, lead covered. A typical gas fan is illustrated in *Figure 3*.



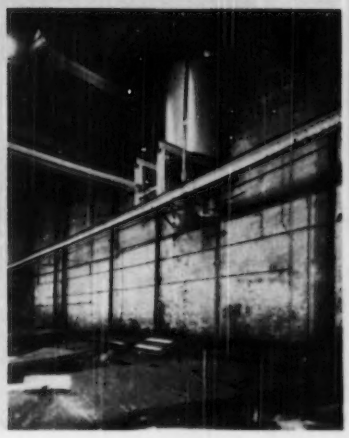
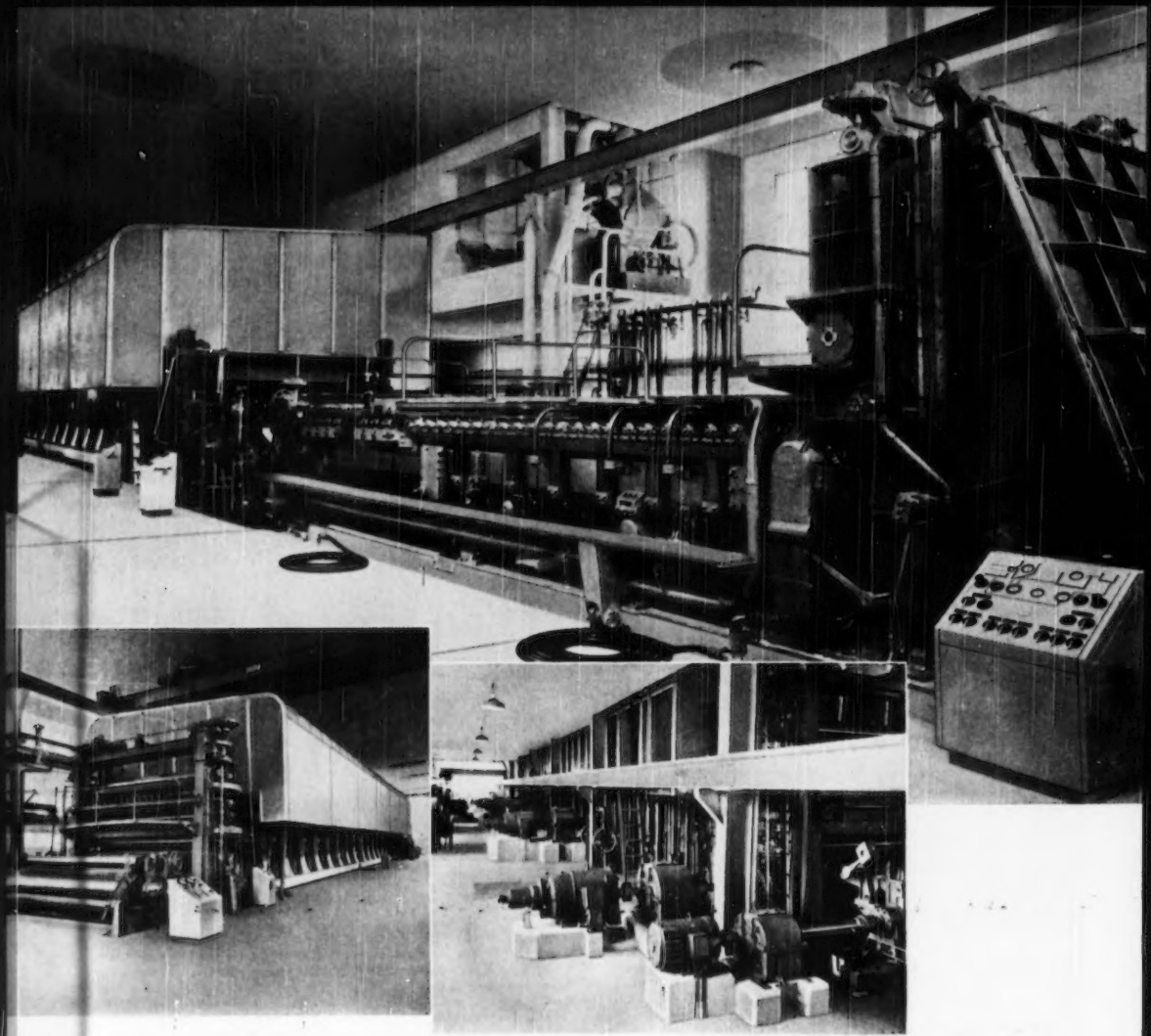


Figure 1. (Upper left) Installation of elliptical antimonial lead gas cooler unit. All elliptical pipe and other sizes up to 12 inch I.D. are seamless. Figure 3. (Upper right) Cast lead gas fan, 6000 CFM Capacity, 20" lead line in service for more than 30 years. Figure 5. (Lower left) Jenssen acid towers. 20" fabricated lead pipe line 100-feet long. Installed in 1925 and still in use. Figure 7. (lower right) 500 gallon liquid alum auxiliary storage or feed tank located at the high point of the beater room. The tank is constructed of steel lined with 10-lb. antimonial lead. Level is maintained automatically by float switch.

From the fan the cooled gas is discharged through a four-way lead plug cock for distribution to the acid towers and large lead lines, field assembled, used to conduct the gas into the base of the towers and from the top, in turn, through a second four-way lead plug cock. A plug cock and cast lead damper are shown in *Figure 4*. Waste gas, carbon dioxide, moisture and traces of sulphur dioxide are discharged through this valve to atmosphere. The water, weak acid and finished raw acid are distributed to the towers by a six-way lead plug cock. The water and acid lines to and from the towers are lead. Here again, proper supports for gas and acid piping are important. A good view of large diameter lead line support may be seen in *Figure 5*. The flow of gas and water is changed each



FEATURES OF THE 138" PUSEYJONES MACHINE AT PAPIERFABRIK UTZENSTORF

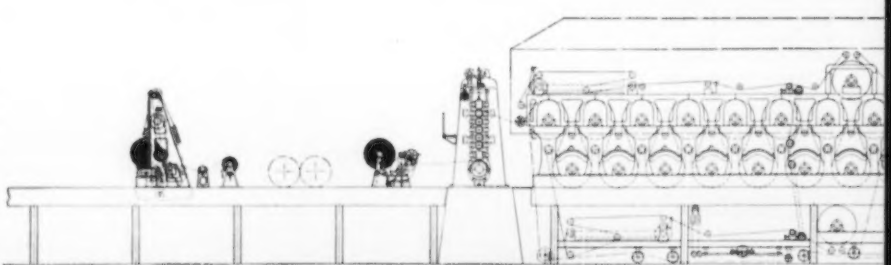
Improved type Flow Spreader combined with 6 ft. high adjustable slice. Special stock level control.

Fourdrinier Part suitable for wire 75 ft. long and 138" wide, seven 7" wide monel suction boxes with oscillating device, 30" suction couch roll with lump breaker roll and pneumatic draw roll; "Rapi-drape" wire changing device and adjustable wire pitch arrangement.

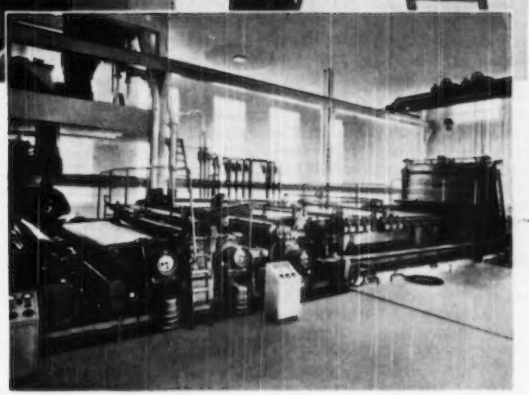
Press Part of dual press arrangement with two 26" rubber covered suction rolls and 32" Stonite covered center roll, also 18" rubber covered top press roll, pneumatic nip loading; complete felt equipment and Vickery conditioner.

One set of smoothing rolls located between press and dry parts, equipped with 24" upper rubber covered roll and 26" bronze cased lower roll, pneumatic nip loading.

Dry Part in two main sections having one upper and one lower felt in each section; first section comprising 16–60" paper and 4–60" felt dryers; second section comprising 16–60" paper and 2–60" felt dryers; improved type enclosed gearing; Bowser lubricating system; rope feed arrangement with automatic transfer



Line drawing of the new Puseyjones Fourdrinier Machine at Papierfabrik Utzenstorf, Switzerland. Designed and constructed for a maximum operating speed of 1200 feet per minute with Brown Bovari sectional electric motor drive. All rolls except bottom calender equipped with anti-friction bearings.



Puseyjones Crosses the Swiss Alps

This Puseyjones Fourdrinier Machine is now in operation at the modernized plant of Papierfabrik Utzenstorf, Switzerland. The addition of new equipment and complete improvement of existing facilities have made this Swiss mill one of the most modern and outstanding on the European continent.

From the improved type Flow Spreader to the 2-drum Winder, this new Puseyjones Machine incorporates the latest features in paper-making machine design and construction. It is producing news and directory paper at the rate of 75 tons daily.

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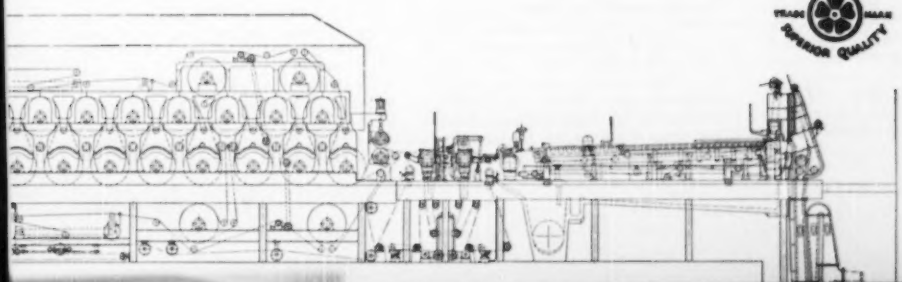
between sections; automatic motor operated felt tension control devices; improved type steam joints with dual revolving siphons.

Calender Stack comprising 8 rolls with independent Bowser oiling system for all roll bearings; pneumatic nip loading.

Pope type Uniform Speed Reel of improved design, with pneumatic adjustable loading mechanism.

Unwinding stands equipped with water-cooled brake and pneumatic tension device.

Puseyjones Winder with hydraulic operated roll unloading mechanism.



day by properly manipulating the gas and acid plug valves to permit filling one tower with limestone.

Acid Pulping

From the acid plant the raw acid, at about 90 degrees F is delivered through lead piping to the reclaiming tank. In this tank, the raw acid is fortified by cooled strong gas relieved from the digesters and then overflows into storage tanks through lead piping. Storage acid temperature is normally about 90 degrees F and the pressure close to atmospheric. Since all of the gas from the digesters is not recovered in the reclaiming tank and provision must be made to prevent a vacuum being created in the tanks when a digester is filled with acid, the tops of all tanks are connected by an 8 inch lead line to the gas fan in the acid plant. Since a small amount of sulphuric acid is formed during the cooking process and all is not absorbed in the reclaiming system, lead is by far the best material to handle the over-gas from the tanks.

In a majority of plants wooden acid tanks are used which present the problem of supporting the heads. It has been found satisfactory to use steel supports, lead covered, on the underside of the head bolted to supporting timbers on top. It is also common practice to cover the iron hoops on wooden acid tanks with relatively thin walled lead piping and the buckles with 4-lb. sheet lead. This prevents corrosion of the hoops by acid seepage.

Where reclaiming towers are used, at atmospheric temperature and pressure, lead is often employed to protect the steel supporting the chemical tile and has proven quite satisfactory.

In acid pulping the acid sulphite and wood chips are brought together in a digester lined with acid resistant brick set in cement composed of litharge (PbO), sand and glycerin. Here temperatures vary from 350 to 300° F and pressures range from 75 to 125 pounds. At the digester top 1-inch antimonial lead covers 36 inches in diameter have given good service. In some cases dished steel covers are lined with 16- to 20-lb. lead. Lead digester relief valves, usually 2 or 4 inches, have been successfully used on the digester cover where relatively low velocities of steam and sulphur dioxide are encountered.

Bleaching

In the bleaching of all chemical pulps, lead is used to handle chlorine gas under approximately atmospheric conditions of temperature and pressure, particularly in the bleach liquor make-up tanks where a perforated lead coil in the bottom of the tank is used to get gas distribution.

A continuous pulp bleaching operation has been adopted which uses two antimonial lead lined tanks. One tank is used twenty-four hours and then switched to the other for twenty-four hours. Antimonial lead valves and pipe serve to convey the bleach liquor solution; a water solution of sulphur dioxident room temperature.

While the bleaching of ground wood by the zinc hydrosulphite method is not widespread, lead is excellent for handling the stock after the zinc has been added. In one process in use, the zinc hydrosulphite powder is added to the pulp, at about 4 percent consistency A.D. (air dry) at a predetermined rate; passed through a pump, to get thorough mixing; delivered to a chest or tank and allowed to stand until bleaching is completed. It is then ready for the beater room without further processing. Because the pulp and zinc hydrosulphite mixture is acid (pH 4.5) from the presence of sulphur dioxide and other sulphur compounds, the use of lead is definitely warranted. Lead also has the important advantage of not discoloring the pulp.

Stock Handling

One of the important chemicals utilized in the paper industry and more particularly in stock handling, is alum. Papermakers' alum is aluminum sulfate, $Al_2(SOD)_3$. 14.5 H_2O, a chemical which is corrosive to practically all of the common materials of construction with the exception of lead and its alloys antimonial lead and tellurium lead. It is used either in dry form or as a liquid solution 40 to 50 percent concentration at about 35° Be (liquid alum).

Alum is introduced in the stock beater or Jordan, or both, to produce coagulation and fibre coating. It is added along with a sizing agent consisting or either a soap made from saponifying rosin with alkali or a wax emulsion. Alum precipitates the size so that a gelatinous film is deposited on the fibre. After water of hydration is removed, the paper produced has a hardened surface that resists penetration by liquids. Alum is also used to neutralize alkalinity of pulp and water, to help pigment and filler retention and to reduce pitch and sticking. Raw water is treated in the filter plant with alum to remove turbidity and color. In the pigment plant it is used with lime to make satin white.

Upon contact with lead, alum forms a thin protective film consisting essentially of lead sulfate which successfully prevents any further reaction with the lead. Since lead corrodes uniformly over its entire exposed surface and not by localized pitting, the introduction of any harmful products of corrosion into the pulp stock is avoided. This latter advantage is particularly significant in the making of fine paper where absolute freedom from chemical impurities is imperative.

Lead is used wherever liquid alum is encountered alone in 1) storage vessels, 2) conveying lines, 3) feed tanks and 4) measuring boxes.

Storage vessels are lined with sheet lead and constructed of concrete, brick, wood or steel. *Figure 6* illustrates an 18,000 gallon lead lined brick liquid alum storage tank. Another type of construction may consist of a skeleton steel framework supporting steel lead. Brick or concrete tanks are first lined with 1/16 to 1/8 inch asbestos sheet to protect the lead from abrasion and any effects of "green" concrete. Lead linings may vary in thickness from 8 to 12 lm. (1/8 to 3/16 in.). For storage purposes where severe temperature fluctuations are not normally involved and where the vessels are not more than 10 feet high supporting straps for the lead are seldom employed. The lead sheet is merely anchored around the top edge and hung over into the vessel in such a manner that the weight is supported by the lip and the bottom.

Alum conveying lines are of lead pipe whose size depends upon the volume of alum being handled: 1¼ inch I.D. with ¼ inch wall to 3 inch I.D. with ⅜ inch wall is commonly used. Over long spans it is almost universal practice to lay the pipe in angle iron or channel iron supports. Cast solid lead valves and pumps or lead lined valves and pumps may be used to control the alum flow. Joints between pipe sections may be of the Van Stone type or "split joints" welded ("burned") together by a properly qualified lead burner.

From storage the alum is usually pumped through lead pipe to an auxiliary storage or "feed" tank located at the high point of the beater room such as shown in *Figure 7*. A float switch is sometimes installed to control the pump automatically to maintain proper alum level. A typical 500-gallon capacity tank is constructed of steel loose lined with 8-lb. sheet lead. From the feed tank the alum flows by gravity through lead pipe to the measuring boxes.

Lead measuring boxes are used to furnish measured amounts of alum to the stock and are often suspended above each beater. One system, and probably the oldest, is to make the liquid alum directly in the measuring box by dissolving dry lump or powdered alum in water heated to 120-140° F. The dry alum is lowered in perforated wooden basket into the lead box containing the hot water where it remains until all of the alum is dissolved. Steam or air agitation is also occasionally utilized to speed up the dissolving process. Boxes may be emptied by either gravity feed directly to the beater or by steam jet siphon. A box for this purpose may consist of a wooden frame 2 x 2 x 2 feet lined with 8-lb. lead. All of the seams are welded ("burned") using burning bar of the same composition as the lining which may be chemical lead or antimonial lead.

Newer systems such as the one illustrated in *Figure 8* use liquid alum at the outset and thus entirely eliminate the necessity for handling and dissolving dry alum. A typical mill receives the liquid alum delivered to the plant by tank truck through lead pipe and stores it in an 18,000 gallon, 10-lb. sheet lead lined reservoir. From here it is pumped through 3 inch lead pipe to a 500 gallon, 10-lb. lead lined feed tank located above the beater room; the alum flows through 2 inch lead pipe to 10-lb. lead lined measuring tanks and

thence directly to each beater. No problems due to alum crystallization at any stage in the system have arisen in any of the mills investigated. This method of handling alum offers real advantages in economy and efficiency over dry alum methods and a number of paper mills are converting to new liquid alum equipment.

Ferric sulfate [$Fe_2(SO_4)_3$] may be used as an alum substitute for sizing in the beater or as a water coagulant to remove turbidity and color from raw water in the filter plant. Lead is specified wherever ferric sulphate solution is encountered because this chemical is not only acid but is also an oxidizing agent.

Sulphuric acid is another chemical used occasionally in stock handling which, of course, requires lead for corrosion protection. Sulphuric acid is used for wire souring, parchmentizing and pH adjustment.

Another application of lead in stock handling is for covering agitator shafts found in stock chests and "knotters." Agitator blades are made of cast iron which is sufficiently resistant to the acid sulphite stock but too brittle and too expensive to be cast into shafts; therefore the shafts are made of steel. But since acid stock rapidly attacks steel it has been necessary to cover the shaft itself with 4- to 6-lb. lead to protect and preserve it. Typical shafts are 3 to 4 inches in diameter and 20 to 30 feet in length.

Because of the abrasion involved, the vessels themselves are usually constructed entirely of acid-resistant brick. When a steel shell is lined with brick it is customary to first line the steel with a sheet of lead to prevent attack of the steel by acid seepage through the brick.

Conclusion

From the foregoing it can be seen that lead is very satisfactory for handling sulphite acid at normal temperatures and pressures and is actually superior for sulphur dioxide carrying traces of sulphuric acid. It is used to advantage in chemical pulp and ground-wood bleach plants where the zinc hydrosulphite process is used. For stock preparation and handling wherever alum is used, lead has found extensive and increasing application.

Employed chiefly for its ideal corrosion resistance to bisulphite and free sulphurous acid combinations, sulphuric acid, and alum, lead is also used for other reasons. It is readily available in large sheets with a wide range of thickness. Hand lead and lead brick valves are also available in a variety of sizes. It has proven to be one of the easiest materials to keep clean; it gives extremely long service; it can be repaired in place. The latter characteristic is especially important for when repairs are necessary they may be accomplished with a minimum of expense and shut down time. In addition, lead is not valueless after its useful service life or obsolescence of the equipment; it may always be salvaged at the highest return of any of the common corrosion resistant materials.

Infra-Red Heating and Drying

GEOFFREY BROUGHTON*

Of the three mechanisms of heat transfer, namely conduction, convection and radiation, the last is perhaps the least understood. The former require contact between hot and cold matter for heat transfer to occur, while the last depends only upon infra-red rays which can pass without contact if necessary even through a vacuum, from the hotter to the cooler body.

Conduction and convection follow well known laws (1), the common characteristic of which is that the heat transfer is proportional to the temperature gradient between the cold and hot bodies. Expressed mathematically,

$$Q = \frac{K\ (T_1 - T_2)\ A}{L} \qquad (1)$$

where Q is the heat transferred in unit time from a body at temperature T_1 to another at temperature T_2 through a distance L and over an area A. K is a constant (proportional to the conductivity or heat transfer coefficient as the case may be.) As already pointed out, for transfer by conduction and convection, contact between hot and cold bodies is necessary and, in transfer by convection, its rate will depend upon the magnitude of their relative motion. This, is because of the necessity for heat transfer through the stagnant gas film at a solid or liquid surface, high velocities naturally cutting down the thickness, and hence the resistance to heat transfer, of this layer. Thus, drying of paper is greatly accelerated at high air velocities, even though the temperature gradient remains constant, because the coefficient K of equation (1) increases with air velocity.

Heat transfer by radiation can be of great value in paper making and converting because of the possibilities of uniform application from a source some distance from the web, allowing its application to many types of paper machinery. Gas flames, infra-red lamps, strip heaters and fiberglass covered wire heaters, the last perhaps giving the greatest uniformity, have all been used as sources of infra-red radiation.

In considering infra-red heating and drying several principles must be considered. Every material emits infra-red radiation, generally considered to be that portion of the electromagnetic spectrum lying above the visible red i.e. above 0.7 μ wave-length. The amount and quality (or wave-length distribution) of the emitted infra-red radiation is a function only of the absolute temperature of the material and its emissivity. Thus, the heat emitted in unit time is:

$$Q = K\ T^4 \qquad (2)$$

where T is the absolute temperature and K is a constant proportional to the emissivity of the surface (a so-called "black body" has the highest possible emissivity, unity). From a consideration of this question, it will be seen that the heat emitted from a radiator rises very rapidly with its temperature, accounting for the fact that in equipment at very high temperatures, e.g. a black ash furnace, most heat transfer is by radiation rather than by conduction and convection.

Not only does the quantity of infra-red radiation vary with the temperature of the radiator, so also does its quality or wave-length distribution. As the temperature rises, the maximum of the wave-length distribution curve moves toward the visible spectrum or decreases in wave-length. *Figure 1* shows the spectrum distribution of a number of well known infra-red sources. A very convenient device for calculation of the amount of infra-red radiation emitted at a given temperature and also its wave-length distribution is the radiation slide-rule obtainable from the General Electric Company (2).

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(1) See e.g. Walker, Lewis, McAdams and Gilliland "Principles of Chemical Engineering," pp. 100-145. Third Edn. 1937. McGraw-Hill.

(2) A. H. Canada, General Electric Review *51*, 50-54, 1948.

(3) A. J. Wells, J. Applied Physics *11*, 137-40, 1940.

(4) The author is indebted to Industrial Radiant Heat Corporation, Gladstone, N. J., for use of equipment to make these experiments.

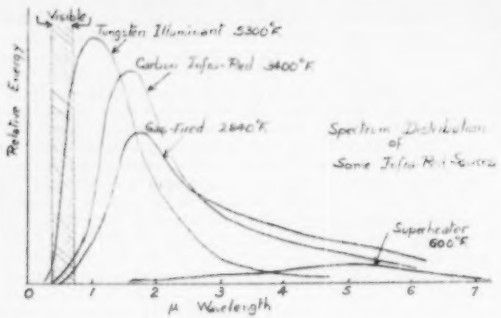

Figure 1—Spectrum Distribution of a Few Well-Known Infra-Red Sources.

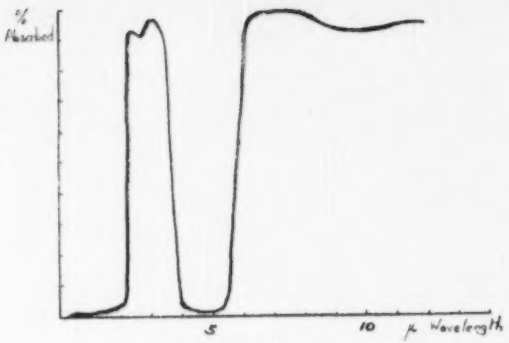

Figure 2—Absorption of Radiant Heat by Nylon.

Just as visible light can be reflected, transmitted or absorbed when it strikes a material, depending on the optical properties of that material, so can infra-red rays be reflected, transmitted or absorbed. Only in the last case, does the radiation heat up the material or, from the usual point of view, perform a useful function. Different materials have different absorption characteristics for the infra-red and hence will behave differently when exposed to infra-red radiation. Many plastics and organic materials are completely transparent, i.e. have 100 percent transmission, for infra-red rays of short wave-length but show strong absorption bands or low transmission to longer wave-length infra-red. A material which is transparent to visible light may be opaque to certain wave-lengths of the infra-red and vice-versa. Many dyes which differ strongly in their absorption characteristics to white light, are identical in their behavior to the longer infra-red.

Figure 2 shows a diagrammatic absorption curve determined on the infra-red spectrophotometer for a sheet of nylon 0.004 ins. thick, while *Table 1* indicates the more important absorption bands in the infra-red for some common plastics. Thickness of the material naturally plays a part in percent absorption; a thick material will, of course, always absorb more radiation than a thin film. Paper of ordinary thickness (3 thousandths inch or greater) is practically opaque across the infra-red spectrum.

Enough probably has been said to indicate that in the case of thin materials the infra-red radiation should match the infra-red absorption spectrum of the material which it is desired to heat. This makes the quality or wave-length distribution *(Figure 1)* of the infra-red heater for a specific job of great importance, since only that portion of the infra-red rays absorbed by the material is useful in raising its temperature. Suppose, for example, it is desired to heat a nylon web. An infra-red source at relatively low temperature, with the majority of its energy in wave-lengths above 6 μ is indicated for best energy utilization. A high temperature source, such as the ordinary infra-red bulb, showing 95 percent of its total energy in wave-lengths below 6 μ, would have little heating effect on the nylon web.

In heating water for evaporation, i.e. drying, similar behavior may be expected. Water first starts to absorb strongly at 1.4 μ. *Figure 3* indicates diagrammatically that for a film 1 mm. thick about 60 percent of the energy from a high temperature source (infra-red lamps for example) should be absorbed, while over 99 percent of the radiation from a low temperature source at 700°F. (fiberglass covered wire heaters for example) will be absorbed. Thus the use of low temperature radiation should lead to savings in electrical energy if both sources of infra-red radiation are electrically heated.

Experiments made in the drying of clay-casein mixes on paper comparing high temperature (lamps) with low temperature (fibre-glass superheaters) infra-red sources, indicate qualitatively that this is true. Measuring electrical input to the heaters and pounds of water evaporated under comparable conditions, considerably greater efficiencies were observed for the low temperature radiation source (4). In the latter case efficiences of over 70 percent were observed.

It seems clear, therefore, that in the installation of infra-red heating or drying equipment, considerable thought should be given to the infra-red absorption characteristics of the material to be treated and to the characteristics of the infra-red heater as well as to such factors as uniformity of heat across the web, maintenance etc. There are now available heaters operating at

Table 1 (3)

More Important Absorption Bands of Some Common Plastics (3.3μ to 25μ)

Rubber	No marked absorption bands.
Pliofilm	8.9 μ
Ethyl cellulose	9
Cellulose acetate	7.5–9.5
Cellophane	12–20; 8.5–10; 4–6
Vinyl resin	5.7; 6.5–8.3 *

* Private observation.

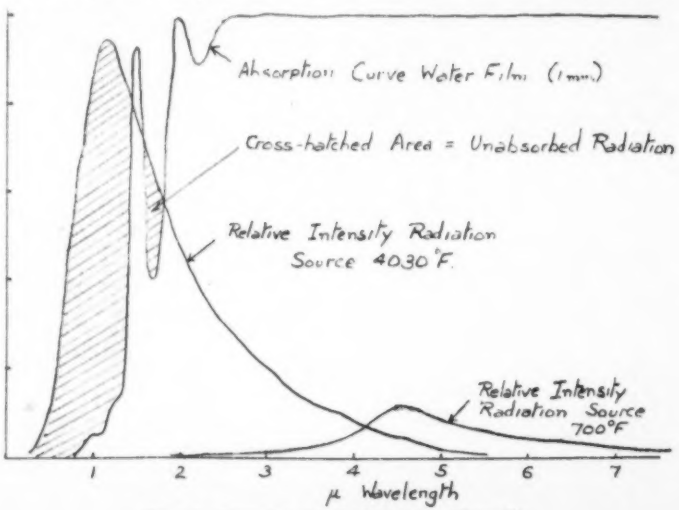

Figure 3—Absorption of Radiant Heat by a Water Film.

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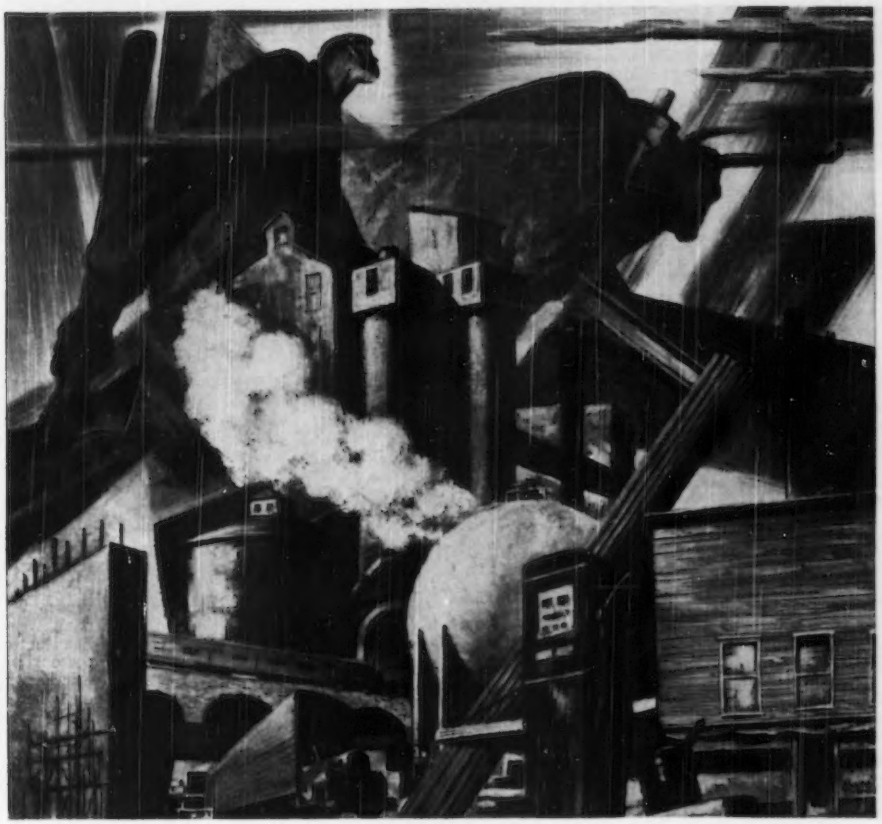

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temperatures from 250°F. to 5000°F. with corresponding wave-length emissions. While heaters operating at high temperature may have high radiant energy emission per unit area, their efficiency may be lowered because of the low wave-length of the emitted radiation. Only careful consideration of the factors involved will allow prediction of the most efficient source of infra-red radiation in terms of both space and electrical power used. When this is done infra-red heating or drying takes a more competitive position with respect to steam, particularly from the stand-point of convenience and ease of application.

Chemical Recovery in Southern Sulphate Pulp Mills*

U. J. WESTBROOK[1]

Author's Note

This paper does not include any technical data. It reviews some of the history of the past twenty years. Some of existing problems are stated. There is some speculation covering what may be done in the future.

Chemical recovery in the pulp mill must be considered as covering the entire operation of the pulp producing system. It also includes such by-products as turpentine, black liquor, soap and tallol.

Pulp Washing

The pulp washing operation has a two-fold purpose: namely, to produce pulp sufficiently free of impurities to be economically processed for delivery to the stock preparation department; and to recover, at the highest concentration, the chemicals that must be processed for re-use.

At the present time, three systems of pulp washing are in use — diffusers, vacuum washers, and pressure washers. Each of these systems accomplish the same purpose, that is, to displace the strong solution in the raw pulp by successive stages with water.

To a large degree, vacuum washers have replaced diffusers.

The advantages of the vacuum washer over the diffuser are: (1) less space required for installation; (2) more positive control of cleanliness of stock and concentration of recovered liquor; (3) continuous operation; (4) less time consumed in washing operation, and (5) less manpower required.

The vacuum washing system also is easily adaptable to pre-refining or, as it is commonly termed, "hot stock refining." This method of refining, because of the higher pulp yields it affords and because of the power econ-

omy effected in the succeeding stages of stock preparation, is rapidly coming into use.

Washing by means of screw presses (pressure washing) is still in process of development. If certain mechanical difficulties in this process can be overcome, the economy of its operation certainly will become a factor to be considered in future installations.

Evaporators

The evaporator installation is the heart of the chemical recovery system.

The evaporators, not being as flexible as the other parts of a modern recovery system, should be selected with greatest care. This care is needed in order to better meet the demands of possible widely varying rates of production brought about by different grades of paper made.

Some recovery equipment can be operated above the rated capacity without excessive penalty. However, when the design capacity of an evaporator is exceeded, high penalties in chemical and heat losses in the later stages of the recovery process must be expected. In the long run, it is less expensive to buy excess capacity in evaporators than in any other item of recovery equipment.

Complete instrumentation is very necessary in the present day evaporator system. This instrumentation should include: temperature actuated steam controllers, feed liquor concentration and temperature recorders, feed liquor flow control-recorders, temperature indicators or recorders on both the liquor and vapor sections of each body, and in the vapor and water sections of the condenser, water flow control-recorder to the condenser, and temperature-concentration recorder on the liquor leaving the evaporator.

Less than twenty years ago, the operation of evaporators was classified as an art. Today, with proper instrumentation, it has become a science—much of the personal element has been removed. One interesting particular of instrumentation, when instrumentation is properly used, is that it indicates when the evaporators should be cleaned. This task, once dreaded by operators and supervisors alike, has been made comparatively easy and of short duration by the use of modern cleaning agents and organized cleaning service.

Recovery Units

Perhaps no item of mill equipment has undergone as much change and improvement in the past twenty years as the recovery unit. Most of this development, effected by the trial and error method, has been accomplished under most difficult conditions. The major improvements began when the technique of spraying liquor of high solids content directly into the furnace was developed. Following this advancement, the high steaming capacity recovery boiler was produced.

The old recovery units of 25-30 tons daily capacity are behind us. Today, units of 300 tons plus are not unusual.

One point that often does not receive proper consideration is that the recovery unit is designed primarily for the recovery of chemicals. The steam produced by such a unit is a by-product of the recovery process.

Improvements in boiler design are constantly increasing the amount of steam produced per pound of black liquor solids processed. Yet, it must be

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* Presented at the 1950 Fall (Joint) Meeting of the Southeastern and Southern Divisions of the American Pulp & Paper Mill Superintendents Assn., held on October 12-14, at the George Vanderbilt Hotel, Asheville, N. C.

[1] General Supt., St. Regis Paper Co., Kraft Div., Pensacola, Fla.

kept in mind that, for a given recovery unit, the highest steaming rate obtainable at a set feet rate may not be the most economical from the standpoint of recovery of chemicals. The conditions necessary for obtaining the best reduction of salt cake to sodium sulphide and maintaining the necessary combustion rate or organic materials in the black liquor do not usually result in the maximum production of steam from the unit.

The introduction of the electrostatic precipitator has resulted in greatly reduced costs of make-up chemical. At the same time, it has added some problems in the sulphate pulping process.

Most operators agree that the sulphidity of the cooking liquor must be kept within definite limits. This procedure is desirable if pulp is to be produced with the strength characteristics necessary for many of the grades of paper and board being made.

The addition of sulphur in the process is one method being used by some of the mills to maintain the desired sulphidity of the cooking liquor. The economy of its use, however, is subject to doubt. The delivered cost of sulphur in carload lots is very little less than the cost of salt cake. Also, under the best of operating conditions, the percentage recovery of sulphur as sodium sulphide is very low.

A suggested method of maintaining sulphidity of the cooking liquor is the oxidation of sulphur compounds in the black liquor by aeration. Some experimental work has been conducted in mill scale trials with this method, but no particular promise of success has been reported as yet.

It is possible to maintain the necessary sulphidity by proper proportioning of primary and secondary air in furnace operation. This proportioning is such that the carry-over recovered by the precipitator contains the maximum percentage of sodium sulphate.

There is another system for recovery of chemical carry-over in use in one or more of the northern sulphate mills but not yet tried in the South. It is the venturi scrubber.

The venturi scrubber shows good chemical recovery percentages. However, these figures are not as high as those for a properly installed and operated electrostatic precipitator.

Work is still in progress on the venturi scrubber. It may yet prove to be attractive because of its lower initial cost and its simplicity of operation and maintenance.

The secondary phase of evaporation necessary to economical chemical recovery is accomplished by utilization of (waste?) heat from the recovery boiler. Since this phase of evaporation is totally dependent on the operation of the recovery unit, it is mentioned here rather than under evaporators.

There are two types of secondary evaporators in general use—the cascade type, successor to the disc evaporator; and the cyclonic evaporator, successor to the spray tower.

Both the cascade evaporator and the cyclonic evaporator are suitable for continuous operation over long periods of time without outage time for cleaning.

The cascade evaporator operates by contact of the hot gases from the recovery furnace with a film of liquor from the primary evaporator. This film is carried on rotating elements of the evaporator which push the liquor forward from the entrance to the discharge of the unit.

Most of the carry-over from the furnace adheres to the viscous film of liquor; and is either dissolved in or carried in suspension by the black liquor.

The operating principle of the cyclonic evaporator differs from the cascade in the method of obtaining contact of the hot gases and the liquor.

The liquor in the cyclonic evaporator is placed on the vertical walls of the evaporator by wall wetting nozzles. It flows down the walls counter-current to the hot gases which are delivered tangentially at high velocity near the bottom of the evaporator by an induced draft fan.

Either the cascade or the cyclonic evaporator must be operated in a manner to keep the exit gas temperature safely above the critical temperature of the precipitator.

Lime Recovery

The lime recovery process has undergone a great deal of development and improvement in the past few years. The trend is toward higher heat utilization of fuel by the use of more efficient burners and longer kilns.

The lengthening of kilns has accomplished heat savings. However, results to date in life of refractory linings and causticizing power of lime produced are by no means comparable with those obtained in medium length kilns.

The importance of fuel saving in lime recovery depends to a large extent on the unit cost of fuel. Some mills are situated so that natural gas is available to them at very moderate cost. Other mills are dependent entirely on fuel oil.

Burners are available that will do an excellent job with either fuel—either natural gas or fuel oil.

The variables common to all lime kilns are: soda content, per cent solids, and rate of feed of lime mud.

Years of operation has demonstrated that low soda content of the lime mud results in a dusty product; also, high soda content can result in sealed pebbles that will be rejected from the slaker or classifier. Mud containing 0.5 to 1.0 per cent soda, based on total solids, usually gives best results.

Consistency of the feed can be easily controlled within the limit of capacity of the mud filter. Theoretically, best results should be obtained by using the highest consistency of mud obtainable. In practice, however, this theoretical consideration does not always prove to be true. In fact, the optimum consistency, which must be determined for each installation, may lie anywhere within the range of 33 to 70 per cent solids.

The rate of feed of a lime kiln, or rather the constancy of the rate of feed, is very important. Much of the ring formation in such kilns is due to feed-rate variation.

Lime mud commonly is delivered to a kiln by a screw conveyor. However, an excellent job of handling at a uniform rate can be done with a properly designed high consistency pump. The use of a pump also allows the filter to be installed at the hot end of the kiln. An entire lime recovery system of this latter design can be operated efficiently by one man.

An efficient dust recovery system at the feed end of a kiln, particularly in a location where the cost of replacement lime is high, is a necessity. The cost of such a system is not prohibitive. Then too, the investment usually can be realized in a relatively short period of time.

The value of the lime lost, however, is not always the deciding factor in favor of a dust recovery system. It may be that the nuisance created by the lime dust makes an installation necessary. In such an instance, the system is required in order to maintain reasonably good relations with the public in the surrounding community.

Since the operation of a lime recovery system is a one-man job, the system should include a bank of instruments properly installed and properly maintained. Among the instruments on the panel should be a fuel flow recorder, a hot end temperature recorder, a damper position indicator and remote control damper positioner, kraft indicators, a mud storage level recorder, and a filter cake thickness recorder.

By-Products Recovery

By-products recovery was given very little attention by the sulphate pulp industry in the South until the late twenties and early thirties. Previously, the majority of mill executives held the opinion that the sole function of the pulp and paper mills was to produce pulp and paper. They all knew that the relief gases from the digesters contained turpentine; but this turpentine generally was considered to be a nuisance because of the unpleasant odor associated with it. Also, the naval stores industry at the time was sufficient to supply the market demands for turpentine.

Pioneer work by one of the southern mills demonstrated that it was possible to recover the crude turpentine from digester relief gases by condensation and decantation. It also revealed that most of the objectionable odors could be removed by chemical reaction. In addition, it showed that

by the use of a vacuum distillation process, employing a fractionating column, it is possible to obtain a turpentine of higher chemical purity than that produced by the naval stores industry.

The cost of producing this turpentine was considerably lower than the market price of the naval stores product. Yet, because of the trace of objectionable odor and of campaigns conducted by the naval stores industry, it did not find a favorable market.

To a large extent, the objections have been overcome by improved chemical treatment which completely removes the mercaptan odor from the finished product; and by definite proof that sulphate turpentine is the superior product in the chemical industry.

Because of the favorable market conditions existing today no company can afford to allow this chemical to go to waste. Small producers may not find it profitable to invest in refining equipment; but they can collect the crude product and market it at such low cost that it is inconceivable that they will allow any of it to go to waste.

Many sulphate men can recall when black liquor soap was a nuisance to both evaporator and recovery departments — particularly those evaporator installations using longitudinal tube units without forced circulation, and also the old style disc evaporators. Improvements in equipment have made it possible to get this material through the evaporators and to burn it in the recovery units, thus realizing some of the value of its high heat content. However, it is much more valuable as a by-product than as a fuel.

Some of the larger plants are processing black liquor soap into a variety of products for which a profitable market has been developed.

The location of the small plant, which cannot afford to install elaborate equipment for processing black liquor soap, affects greatly the form in which this by-product can be most profitably marketed. It may be advantageous for a small mill to market the crude product to a large processor, if such a processor is located nearby and if the freight rate is low. Where the freight rate is prohibitive, it usually is more profitable to separate the crude tallol by acidification and to market it.

The perfection of an economical process for separating resin and fatty acids from tallol may put the industry in a favorable competitive position in the agricultural fats market. There also is the possibility that black liquor recovery operations may undergo major changes in the not too distant future to permit the recovery of other valuable products which the liquor contains.

Joint Meeting of Southern & Southeastern Divisions of APPMSA

The most successful joint meeting in the history of the Southern and Southeastern Div. of the American Pulp and Paper Mill Superintendents Assn. was held at the George Vanderbilt Hotel, Asheville, N. C., October 12-14 inclusive. Approximately 300 members and affiliates, including 90 wives, attended the three-day affair.

In addition to members and guests from the two local divisions, the meeting was attended by many of the officers and former officers of the national organization of APPMSA. Included among these were Fred Boyce, Milwaukee, Wis.; William Brydges, National Container Corp., Lynchburg, Va.; Ray Barton, Michigan Paper Co., Plainwell, Mich., trustees and past presidents, APPMSA. Also present were Charles Ackley, Crown Zellerbach Corp., West Linn, Ore., national president, and Harry Weston, Chicago, Ill., national secretary, APPMSA.

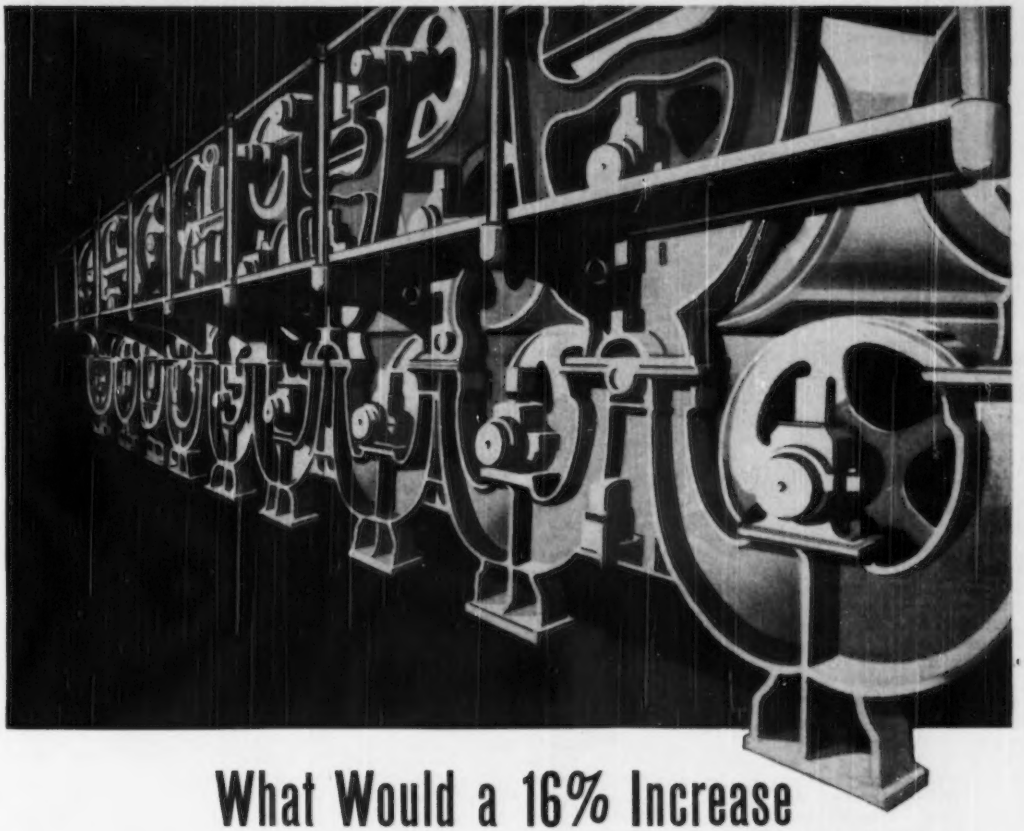
Registration of members and affiliates began on Wednesday evening, October 11, and continued at 8:00 a.m., October 12.

Thursday, October 12

The meeting was officially opened at 9:15 a.m. with an invocation by Rev. James McLarty, pastor of West Asheville Methodist Church. An address of welcome was delivered by the Hon. Clarence Morgan, mayor of Asheville. William H. Brydges, trustee of APPMSA, delivered the response to the address of welcome.

The first technical session, with A. M. Downey as chairman, was opened about 10:00 a.m. with a paper entitled, "Paper Making" by J. A. Jackson, Kraft Paper Div., St. Regis Paper Co., Pensacola, Fla. The next paper was "Paper Made From Old Crossties" by H. G. Hard, Jr., and Leslie D. Methvin. This paper was presented by Dr. Reavis C. Sproull, asst. dir., Southern Research Institute, Birmingham, Ala. The last paper of the first morning session was "The Problems of Woodsland Management

Above—Officers Southern Div. Left to right: Andrew F. Downey, retiring chairman; W. C. Hayes, Sec.-Treas.; Otha Winningham, new Chairman; John Thompson, 1st Vice-Chairman. Not present, Tom Coldeway, 2nd Vice-Chairman and Bruce Brooks, 3rd Vice-Chairman . . . Below—Officers Southeastern Div. Left to right: Clyde Jones, 3rd Vice-Chairman; Carl Welte, new Chairman; R. C. Bullock, retiring Chairman; Cecil Curry, 1st Vice-Chairman. Not present Vinson K. Shannon, 2nd Vice-Chairman and T. P. Barnes, Sec.-Treas.



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for the Pulp and Paper Industries in the Southern Pine Region" by J. E. McCaffrey, woodsland manager, Georgetown Div., International Paper Co., Georgetown, S. C.

The afternoon session began at 2:00 p.m. with Carl Welte as chairman. The following papers were presented: "Partial Acidification of Unbleached Kraft Pulp" by Jesse C. Bradbury, Southland Paper Mills, Inc., Lufkin, Texas; "Mill Operation From the Stream Pollution Point of View" by Stuart C. Crawford, consulting engineer, Franklin, Va.; "Pulp and Paper Mill Chemical Recovery" by U. J. Westbrook, asst. plant mgr., St. Regis Paper Co., Kraft Div., Pensacola, Fla.

The mill suppliers sponsored a get-together party at 6:30 p.m. in the Asheville Civic Auditorium, located next door to the George Vanderbilt Hotel. This party was followed by a dinner with Lee M. Bauer, mgr. of mfg., Ecusta Paper Corp., as toastmaster. Mr. Bauer introduced Harry H. Straus, Jr., who delivered an address of welcome to the members and guests.

Following the dinner, an excellent program of entertainment was provided by John Eversman, recreation dir., Ecusta Paper Corp., and the Ecusta Square Dance Team. This was followed by square dancing for the entire group.

Friday, October 13

The morning session, which was in charge of Chairman Cecil Curry, included the following papers: "The Rediscovery in Labor Relations" by J. O. Wells, personnel dir., Ecusta Paper Corp., Pisgah Forest, N. C.; "Waste in Pulp and Paper Mills" by Fred Keys, N. C. Pulp Co., Plymouth, N. C.; "Surface Sizing and Printability of Test Liners" by Vance W. Vallandingham, The Kelco Co., Chicago, Ill.

R. C. Bullock, Southeastern Div. chairman, presided over the Joint Luncheon in the West Ballroom of the George Vanderbilt Hotel.

Hon. Monroe M. Redden, U. S. Congressman, N. C. 12th District, who was scheduled to be the principle speaker, was unable to be present because of the serious illness of his mother. However, R. G. Deyton, asst. treas., Ecusta Paper Corp., who was

Tom Coldeway, St. Joe Paper Co., new 2nd Vice-Chairman, Southern Div.

scheduled to introduce Congressman Redden, gave an interesting talk about the State of North Carolina and its industries.

The afternoon session was presided over by Chairman John Thompson. The following papers were presented: "Stock Preparation in the Manufacture of Liner Board" by Otha Winningham, and W. C. Haynes, National Container Corp., Jacksonville, Fla.; "Hot Stock Refining" by T. S. Coldeway, St. Joe Paper Co., Port St. Joe, Fla.; "The Selection of a Pulper" by Jacob V. Edge, sales engineer, Downingtown Mfg. Co., Downingtown, Pa.

Saturday, October 14

The business meetings and elections of both the Southern and Southeastern divisions were held jointly in the Victory Room at the George Vanderbilt Hotel at 9:00 a.m. The following slate of officers were elected for the Southeastern Div.: Chairman, Carl Welte, Champion Paper & Fibre Co., Canton, N. C.; 1st vice-chairman, Cecil Curry, National Container Corp., Big Island, Va.; 2nd vice-chairman, Vinson K. Shannon, Mead Corp., Lynchburg, Va.; 3rd vice-chairman, Clyde Jones, Ecusta Paper Corp., Pisgah Forest, N. C.; secretary-treasurer, T. R. Barnes, Champion Paper & Fibre Co., Canton, N. C.

The Southern Division elected the following new officers: Chairman, Otha Winningham, National Container Corp., Jacksonville, Fla.; 1st vice-chairman, John Thompson, Southland Paper Co., Lufkin, Texas; 2nd vice-chairman, T. S. Coldeway, St. Joe Paper Co., Port St. Joe, Fla.; 3rd vice-chairman, Bruce Brooks, Brown Paper Mills Co., Monroe, La.; secretary-treasurer, W. C. Hayes, National Container Corp., Jacksonville, Florida.

At the business meeting, it was decided to hold a joint meeting of the two divisions again next year in October, at Jacksonville, Fla. It was agreed by the members of both divisions that there was no intention of setting a precedent to have joint meetings every year. It was further agreed that the decision as to joint or separate meetings should be made each year by the division chairmen, who will also decide on meeting dates and locations.

The question of additional meetings, which was brought up by William Brydges, aroused a general discussion during which it was generally agreed that more meetings might be helpful. It was decided to consider the possibility of each division having a local spring meeting in addition to the joint fall meeting.

Champion Mill Visit

Shortly after 10:00 a.m. the entire group was taken, in buses, to the mill of Champion Paper & Fibre Co. at Canton. Here they were divided into groups of about 10 people and shown through the plant.

Since it was impossible to see the entire mill in the limited time available, the groups were arranged according to the part in which they were most interested, so that more time could be spent in that portion.

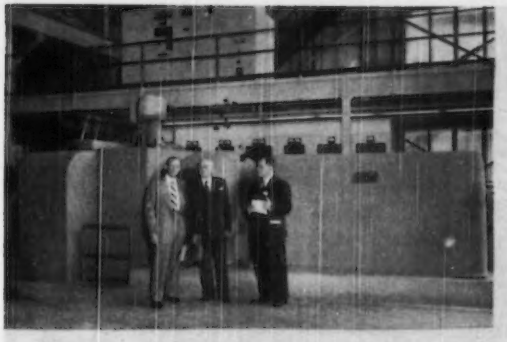
Of particular interest to the guests were those features that are rather uncommon, such as the electrodytic bleach plant. Here, 198 Hooker type S cells produce 50 tons of chlorine and 55 tons of caustic soda every day. The daily requirements for this plant are 85 tons of sodium chloride and 160,000 KWH of direct current.

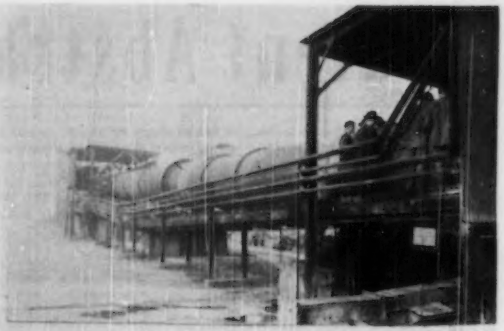
Most of the caustic soda is concentrated to 50 percent by evaporation of water, purified and shipped in tank cars, tank trucks or drums for use in other industries, especially the textile industry.

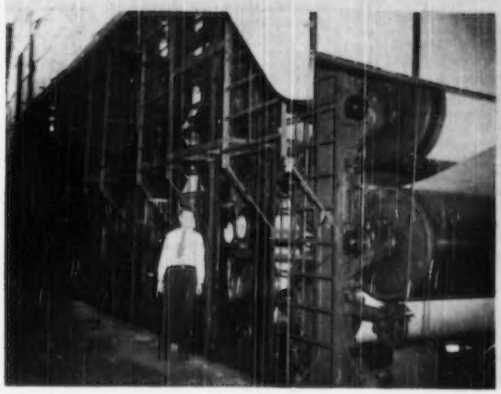
Practically all of the chlorine produced is consumed at the mill for pulp bleaching. Part of it is used for pulp

Host at the Champion Mill visit; left to right: H. A. Helder, Div. Manager; George Trostel, Mill Manager; Carl Welte, Asst. Production Sup't.

Left to right: J. O. Wells, Personnel Dir., Ecusta Paper Co.; Fred Keys, North Carolina Pulp Co.; Vance Vallandingham, The Kelco Co., presented papers at the Friday morning session.







CHAMPION MILL VISIT

Top—left: Allan Hyer, Bagley & Sewall; Billy Battison, Champion; and Joe Schuerman, Bagley & Sewall in front of Champion's newest G.E. 7500 KW turbine generator. Top—right: Group of visitors inspecting discharge end of 370 ft. lime kiln. Center—left: Visitors in electrolytic bleach plant. Center—right: Visitors in mill recovery area. Lower left: Roy Trummell, Champion Board Mill Sup't. in front of newly enlarged drier section on number 16 board machine. Lower right, Champion men who acted as guides, photographed in Champion YMCA; left to right: Ray Foster, Electrical Engineer, Phil Kinken, Recovery plant Sup't.; Jimmy Wilkinson, Maintenance Engineer; Nat Fortney, Chemist.

chlorination but the greater part is combined with lime to make calcium hypochlorite. Forty tons of quicklime are used each day for this purpose.

Another point of interest was the bleach plant where 450 tons of pine sulphate pulp per day are bleached. This is a multi-stage system consisting of chlorination, caustic extraction, high density hypochlorite, caustic extraction, low density hypochlorite and for the highest color bleached pulp, a second low density stage. Each of the above stages is, of course, followed by washing on a vacum washer.

In the paper mill, a great deal of interest was shown in a new *Mount Hope* Expander Roll on number 12 paper machine. According to the operators, this roll is doing an excellent job in preventing wrinkles from forming as the sheet leaves the size press. Number 12 machine is a Pusey Jones Fourdrinier which trims 220 inches and is used principally for making white envelope and bond papers.

At 12:30 p.m. the entire group of visitors were guests of Champion for an excellent lunch in the company cafeteria. Carl Welte, asst. production supt. of the Champion Canton Div.,

(Continued on page 34)

Patent Abstracts

● In addition to abstracts on the technology of pulp, paper and related industries, miscellaneous abstracts which may provide useful information are included.

United States

U.S. 2,521,413—Web Tension Control Means. Joseph S. Scheuermann and Thomas N. Carter, Chicago, Ill., assignors to Cameron Machine Company, Brooklyn, N. Y. Filed November 16, 1944 — Issued September 5, 1950.

In a machine employing a tensioned running web of flexible material, which machine has tension-control means including a reciprocatory carriage that moves in a straight guide and is provided with a roll that engages a bight in said running web, the combination with said carriage; of a rocker-lever pivotally mounted at one end and pivotally connected at the other end to said carriage; a rocker-bar pivotally supporting said first-mentioned end of said rocker-lever; and a power device including: two axially alined shafts parallel to said rocker-bar, a pivotal support for one of said shafts, pivotal connecting means between said other shaft and said rocker-lever at an intermediate point of the latter, and means mounted on said shafts to effect lengthwise movement of said other shaft.

U.S. 2,521,532—Lignin Resins and Process of Making Same. Harry A. Mitman and Raymond N. Evans, Laurel, Miss., assignors to Masonite Corporation, Laurel, Miss. Filed July 27, 1946—Issued September 5, 1950.

The process of preparing a resinous material which comprises heating lignin, furfuryl alcohol and formaldehyde containing water in the presence of an acid catalyst until the fluid resin formation has advanced to the intermediate state, adding a compound chosen from the group consisting of hydroxides and carbonates of alkali metals and alkaline earth metals to react with the acid catalyst to precipitate a metal salt, removing the water from the resin in an organic solvent, removing the precipitated salt from the resin solution, and heating the fluid resin to form a substantially thermoset resin.

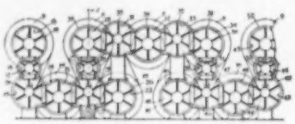
U.S. 2,521,554—Method of Making Paper-Covered Veneer. Richard N. Ware, Jr., and Reginald Cannon, Tallulah, La., assignors to Chicago Mill and Lumber Company, Chicago, Ill. Filed July 16, 1947—Issued September 5, 1950.

The method of making paper covered wood veneer which comprises wet steaming a wound wood veneer roll to heat the wood without drying it, unwinding the hot steamed veneer from the wood, advancing the unwound hot steamed veneer between the adhesive coated faces of two sheets of wet stretched kraft paper, pressing the adhesive coated faces of the paper against the hot setamed veneer as it advances, passing the advancing assembly through a heated chamber to partially set the adhesive for forming a non-slipping bond between the wood and paper without drying the wood to its shrinking point, and drying the paper covered veneer to a moisture content between 6 percent to 12 percent while the adhesive bond holds the wood in its expanded swollen wet condition.

U.S. 2,521,605 — Electrostatic Precipitator. Earl L. Richardson, Hyde Park, Mass., assignor, by mesne assignments, to Westinghouse Electric Corporation. Filed September 28, 1946—Issued September 5, 1950.

An electrostatic precipitator comprising a plurality of electrodes formed as plates of electric insulating material with layers of electric conductive material on the surface thereof, and metal supporting rods extending through perforations in said electrodes, alternate of said electrodes having the said conductive material omitted around the perforations therein said rods contacting only the insulating material of said alternate electrodes.

U.S. 2,521,735 — Paper Machine Drier. Bernard A. Malkin, Lachine, Quebec, Canada, assignor to Dominion Engineering Works Limited, Lachine, Quebec, Canada. Filed October 4, 1948 —Issued September 12, 1950.



In a paper machine dryer assembly, a frame structure, upper and lower rows of dryer cylinders equipped with spindles journalled in said frame structure, corresponding ends of said spindles being each provided with a spindle gear rigidly secured thereto, additional gears forming, with said spindle gears, a gear train interconnecting all of said dryer cylinders, gear casings individually enclosing component gears of said gear train and rigidly connected together in communicating relationship to conjointly provide a continuous gear housing consisting of upper, lower and intermediate rows of gear housing sections with the housing sections of each row spaced part in the longitudinal direction of the dryer and with each housing section of the intermediate row connected to housing sections of the upper and lower rows and means supporting said continuous gear housing independently of said frame structure, said assembly being further characterized in that each of said additional gears is rotatably supported by its enclosing gear casing.

U.S. 2,521,916—Manufacture of Organic Acid Esters of Cellulose. William B. Hincke, Kingsport, Tenn., and Carl J. Malm, Rochester, N. Y., assignors to Eastman Kodak Company, Rochester, N. Y. Filed November 23, 1946—Issued September 12, 1950.

A process for preparing lower fatty acid esters of cellulose which comprises mixing cellulose and an esterification mixture essentially consisting of lower fatty acid anhydride, acylation catalyst, and a solvent, in an esterification mixer while the mixer blades and walls are cooled, until the cellulose starts to go into solution, then while continuing the mixing with the cooled mixer blades imparting to the walls of the mixer contacted by the cellulose ester solution, a temperature of 80-130°F. until the esterification is completed.

U.S. 2,522,430—Suppression of Corrosion. Elza Q. Camp, Goose Creek, Tex., assignor to Standard Oil Development Company. Filed July 2, 1945—Issued September 12, 1950.

In a method wherein a non-ferrous alloy comprising a major portion of metallic copper is exposed to a fluid having present in corrosion producing amounts a compound selected from the group consisting of ammonium hydroxide and ammonia, the step of suppressing corrosion of said alloy by incorporating a mercaptan in the fluid in an amount within the range of .002 to 6 mole percent of the compound if the fluid is a liquid and within the range of .02 to 2 mole percent of the compound if the fluid is a gasiform medium.

U.S. 2,522,556—Magnetic Separator. Charles Erb Wuensch, San Francisco, Calif., by decree of distribution to Eunice L. Wuensch. Filed April 26, 1947 — Issued September 19, 1950.

In a separator for removing fine magnetizable particles from suspension in a fluid, the combination which comprises a settling chamber, an inlet conduit for the suspension projecting downwardly into the chamber from the top, an outlet for separated fluid from the chamber above the bottom of the inlet conduit, an annular magnet disposed approximately concentrically with the upright axis of the chamber above the bottom of the inlet and below the outlet with its lines of force passing through the space in the upper portion of the chamber above the bottom of the inlet conduit and below the outlet, a scraper rotatably mounted in the chamber and having blades projecting into the space for removing magnetizable particles attracted by the magnet and causing them to settle in the chamber, means for rotating the scraper, an annular non-magnetizable baffle disposed above the magnet and partially closing the space, and another outlet for the settled magnetizable particles from the bottom of the chamber.

U.S. 2,522,580 — Cellulose Esters. Mervin E. Martin and Troy M. Andrews, Cumberland, Md., assignors to Celanese Corporation of America. Filed February 28, 1947 — Issued September 19, 1950.

In a process for the production of cellulose acetate of improved clarity and freedom from haze, wherein cellulose is esterified with acetic anhydride employing sulfuric acid as catalyst and acetic acid as a solvent for the cellulose acetate formed and the cellulose acetate is ripened to the desired acetyl value at an elevated temperature after neutralizing at least part of the sulfuric acid catalyst, the steps which comprise neutralizing the sulfuric acid catalyst with magnesium acetate, diluting the neutralized, ripened solution with 20 to 80 parts by weight of a 20 to 80% by weight aqueous solution of acetic acid cooled to a temperature of —15° C. to +20° C., further cooling the neutralized, ripened solution of cellulose acetate rapidly to a temperature of 20 to 50° C., allowing the cooled solution to stand whereby long, needle-shaped crystals of magnesium sulfate are formed, and then filtering the cellulose acetate solution through a layer of said long, needle-shaped magnesium sulfate crystals.

U.S. 2,522,627 — Manufacture of Sheets or Webs of Fibrous Textile Materials. James H. MacGregor, Bocking, Braintree, and Frank Happey, Hartington Crescent, Coventry, England, assignors to Courtaulds Limited, London, England. Filed February 17, 1949 — Issued September 19, 1950.

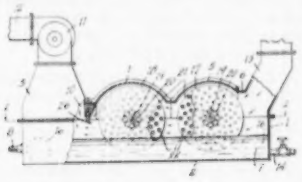
A process for the manufacture of sheets of fibrous textile material which comprises forming a layer consisting at least in part of cyanoethyl cellulose ether fibers having a nitrogen content of from about 2 to about 11 per cent on the weight

at the dry, ash-free fiber, said fibers having internal elements of unetherified cellulose and rendering the cyanoethylated cellulose adhesive whereby the fibers in the layer are bonded together.

U.S. 2,522,707—Composition for the Method of Coating Concrete Structures. Knud Aage Faber and Jens Laurits Jensen, Aarhus, Denmark. Filed January 27, 1948—Issued September 19, 1950.

A method of impregnating surfaces of buildings made of masonry comprising the steps of mixing 35 to 75% by weight of powdered cement, 25 to 35% of powdered sodium carbonate and 3 to 15% of powdered tartaric acid; adding water to the mixture to form a soft paste; and applying the paste immediately after making it to the surface to be impregnated.

U.S. 2,522,905—Evaporator. Charles W. Smith, Muskegon, Mich. Filed August 17, 1945 — Issued September 19, 1950.



An evaporator of the class described comprising an evaporating chamber having a top and side walls and provided with a liquid tank at the bottom thereof and with an inlet for heated gases at one end and a gas discharge at the other end located above the liquid of the tank, and an evaporator wheel arranged in said evaporating chamber between said gas inlet and outlet and with its axis transversely of the chamber and comprising end members and a plurality of rod-like members extending between and secured to said end members, said rod-like members being arranged in staggering relation, the walls of the chamber coacting with the wheel to compel gases passing through the chamber to pass transversely through the wheel above the liquid in the tank, the level of the liquid in the tank being such that a substantial part of the rod-like members are alternately passed through and submerged within the liquid in the tank and exposed to the heated gases passing through the evaporating chamber, said rod-like members being of substantially circular cross section to facilitate the flow of the heated gases against both the front and rear surfaces of each rod-like member regardless of its position in the cycle of translation above the liquid in the tank.

Canadian

Can. 468,037 — Catalytic Bleaching with Chlorites (C_4). Robert M. Levy and James E. Brennan, Pisgah Forest, North Carolina, U.S.A., assignors to Ecusta Paper Corporation, Pisgah Forest, North Carolina, U.S.A. Filed July 20, 1949—Issued September 12, 1950.

In bleaching cellulosic material, the improvement which comprises treating the cellulosic material with an aqueous solution containing a chlorite of a metal of the class consisting of the alkali metals and the alkaline earth metals, and a catalyst for said chlorite comprising a relatively small amount of a water soluble salt of a metal of the class consisting of cobalt, nickel, and manganese, and maintaining the pH during the bleaching operation at a value of about pH 5 to pH 8.5.

In bleaching flax pulp, the improvement which comprises treating the flax pulp with an aqueous solution containing a chlorite of a metal of the class consisting of the alkali metals and the alkaline earth metals, and a catalyst for said chlorite comprising a relatively small amount of water soluble salt of a metal of the class consisting of cobalt, nickel, and manganese, and maintaining the pH during the bleaching operation at a value of about pH 5 to pH 8.5.

In bleaching wood pulp, the improvement which comprises treating the wood pulp with an aqueous solution containing a chlorite of a metal of the class consisting of the alkali metals and the alkaline earth metals, and a catalyst for said chlorite comprising a relatively small amount of a water soluble salt of a metal of the class consisting of cobalt, nickel, and manganese, and maintaining the pH during the bleaching operation at a value of about pH 5 to pH 8.5.

Can. 468,053 — Polymerization of Rosins. Avery Adrian Morton, Cambridge, Massachusetts, U.S.A., assignor to Hercules Powder Company, Wilmington, Delaware, U.S.A. Filed September 4, 1941 — Issued September 12, 1950.

The process of polymerizing a material selected from the group consisting of rosin and rosin esters which comprises treating said material in solution in a paraffin hydrocarbon selected from the group consisting of propane, butanes, pentanes, and hexanes boiling not substantially above 60°C., with a sulphuric acid polymerizing agent under polymerizing conditions.

Can. 468,116—Fibre Reinforced Material and Methods of Making Same. Edward J. Carter, New York, New York, U.S.A., assignor to William M. School, Chicago, Illinois, U.S.A. Filed January 19, 1948 — Issued September 12, 1950.

A transparent flexible sheet comprising a reinforcing layer of porous bibulous paper and a continuous body of a transparent, hardened organic plastic material impregnating and enclosing said paper and forming smooth surface layers on both sides of said paper.

Can. *468,131—Web Materials.* Camille Dreyfus, New York, New York, U.S.A. Filed December 20, 1946—Issued September 19, 1950.

Process for the preparation of coherent batting material having their surfaces coalesced to yield a strong unitary structure and containing staple fibres having a basis of a thermoplastic material, which comprises forming a batting of interlaced and matted unplasticized staple fibres at least a portion of which fibres have a basis of a thermoplastic material, applying water to the surfaces thereof, and then subjecting the wetted batting material to the action of a heated surface whereby at least a portion of the thermoplastic staple fibres at the surfaces only of the batting material are softened and coalesced.

Can. *468,145 — Making Paper Containers Greaseproof.* Ralph H. McKee, New York, New York, U.S.A. Filed November 13, 1945—Issued September 19, 1950.

A method of grease-proofing a single-layer porous paper container which consists in applying a heated aqueous coating composition containing a glue, a plasticizer, a conditioner and a quantity of hexamethylenetetramine equal to 0.2 to 0.5 per cent of the glue as a thin layer to the inside surface of the container thereupon filling the container with oil, congealing the coating composition by contact with the oil, sealing the container, hardening the coating and drying the same by evaporation of moisture through the porous container wall.

A method of grease-proofing a single-layer porous paper container made of paper having a pH of less than 6 which consists in applying a heated aqueous coating composition containing a low viscosity glue, a plasticizer, a conditioner and a quantity of hexamethylenetetramine equal to 0.2 to 0.5 per cent of the glue as a thin layer to the inside surface of the container, thereupon directly filling the said container with oil, congealing the coating composition by contact with the oil, sealing the container, producing by the reaction of the hexamethylenetetramine with the acid of the container wall formaldehyde, hardening the coating composition by said formaldehyde and drying the same by evaporation of moisture through the porous container wall.

Can. *468,217—Photosensitive Papers.* Sam Charles Slifkin, Binghampton, New York, U.S.A., assignor to General Aniline & Film Corporation, New York, New York, U.S.A. Filed November 8, 1946—Issued September 19, 1950.

A diazotype sensitized material comprising a paper support, sodium alginate as a sizing material, and a light sensitive diazo compound in a sensitizing layer on a sized side of the paper support.

Can. *468,258 — Corrosion Protective* Compositions. Edward J. Jahn, Edwardsville, Illinois, U.S.A., assignor to Shell Development Company, San Francisco, California, U.S.A. Filed June 2, 1942—Issued September 19, 1950.

A corrosion-inhibiting composition comprising non-gaseous hydrocarbons containing amounts sufficient to inhibit corrosion, each of a polycarboxylic acid having corrosion-inhibiting properties, and of an auxiliary oil-soluble, water-insoluble compound having but little corrosion inhibiting power selected from the group consisting of hydrocarbon monocarboxylic acids free from either-forming hydroxyl radicals and esters thereof with monohydric alcohols.

Can. *468,267—Methods of Manufacturing Continuous Regenerated Cellulose Webs.* Curt Lindqvist, Norrkoping, Sweden, assignor to Svenska Rayon Akiebolaget, Valberg, Sweden. Filed August 17, 1948—Issued September 19, 1950.

The process of manufacturing continuous regenerated cellulose webs which comprises simultaneously extruding viscose solution from a pair of spaced nozzles in sheet form into a liquid having coagulating and regenerating properties and keeping the nascent webs segregated in said liquid until completely regenerated surface films are formed on each web, then bringing the webs together with their adjacent surfaces in contact with each other and maintaining said surfaces in contact at all times while advancing said webs through regenerating liquid until the conversion from the xanthate to cellulose is effected entirely through the webs, and through subsequent after-treating baths and finally separating said webs as they continue their movement and passing them individually through drying means.

UTICA BOX CO. GETS TROPHY

UTICA, N. Y. — Utica Box Co., Inc., has received a trophy from the State Insurance Fund for its outstanding safety record in the Fund's 1950 Accident Prevention contest.

SUPPLIERS

CRANE CO., Chicago, has appointed J. W. Greene to the newly created position of assistant manager of the Valve & Fitting Department.

HOOKER ELECTROCHEMICAL CO. has appointed Thomas E. Moffitt assistant works manager of its Tacoma, Wash., plant. The Hooker company's main plant and offices are at Niagara Falls, N. Y.

R. B. MACMILLIN ASSOCIATES, consulting chemical engineers, announce the opening of new offices at 610 Niagara Building, Niagara Falls, N.Y. The enlarged staff now includes: R. B. MacMullin, director; D. W. Hengerer, pulp and paper activities; P. P. Beno and R. A. Williamson.

NATIONAL ANILINE DIVISION, Allied Chemical & Dye Corp., with headquarters at 40 Rector street, New York, N. Y., has appointed H. J. Daigneault director of domestic sales.

Mr. Daigneault, for many years manager of the New England territory, succeeds E. M. Maxwell who recently became president of National Aniline Division.

SHARTLE BROTHERS MACHINE CO. at Middletown, Ohio, a division of The Black-Clawson Co., announced that to date 732 Hydrapulpers have been sold and that over 90 percent of that number are in daily operation on practically all grades of paper and board being produced on the world-wide market.

SYNTHETIC RUBBER

CLEVELAND, Ohio — An estimated 5,000 new jobs will be created by the Government's decision to reopen all of the nation's facilities for producing man-made rubber, some of which have been closed down since shortly after the end of World War II.

B. F. Goodrich Chemical Co. has the responsibility of producing 150,000 long tons of rubber in the new Government program. The company, which now operates a Government co-polymer plant in Port Neches, Texas, with a design capacity of 60,000 tons, will reopen and operate the Government co-polymer plant at Institute, W. Va., having a design capacity of 90,000 tons.

ALLIS-CHALMERS FORUM

A forum on modern trends, proper installation and maintenance of processing and power machinery will be held October 26 and 27 at the Hotel Niagara in Niagara Falls, N. Y., by the Allis-Chalmers Manufacturing Co.

L. W. Grogan, Buffalo district office, "Stock Process and Solids Handling H_2O Applications"; R. W. Davis, Norwood (Ohio) Works, "Motor Requirements for Operation in Chemical Industry"; I. K. Cox, and H. W. Erickson, both of New York, "Heavy Duty Screening, Crushing" and "Mining," respectively; H. A. Wilson, "Texrope Products"; E. R. Narum, "Typical Applications of Unit Substations in Industrial Plants"; A. T. Templin, "Sifting Fine Mesh Products"; and H. M. French, "Grinding." Messrs. Wilson, Narum, Templin and French are all from Allis-Chalmers West Allis Works.

Harold K. Beck has been appointed commercial vice-president, in addition to his present post as manager of the Washington office of Worthington Pump and Machinery Corp.

CLAIM CORN PRICE FIXING

A Federal Trade Commission Trial Examiner has filed an initial decision which would require nine manufacturers of corn derivatives and seven of their sales subsidiaries to cease and desist from conspiring to fix prices in violation of the Federal Trade Commission Act.

The provisional order would prohibit the use of basing-point and zone systems of pricing when such systems are the result of "any planned common course of action, agreement, understanding, combination or conspiracy" among the respondent companies.

The order also would require discontinuance of discriminatory pricing practices which are violative of the Clayton Antitrust Act, as amended by the Robinson-Patman Act.

FRANKLIN STRAIN

PITTSBURGH PLATE GLASS CO. announces the appointment of Dr. Franklin Strain as acting director of research in charge of the Columbia Chemical Division Laboratories at Barberton, Ohio.

ASHEVILLE MEETING

(Continued from page 31)

and newly elected chairman of the Southeastern Div. APPMSA, introduced H. A. Helder, div. mgr. of Champion, who delivered a brief address of welcome.

During the afternoon, many of the visitors stayed at the mill and visited parts they had missed during the morning tour or observed the operation of equipment in which they were especially interested. There were no parts of the mill closed to the guests. This was really an "open house."

The golfers left immediately after lunch for the Beaver Lake golf course where they spent a pleasant afternoon in the cool but sunny weather.

At 6:15 p.m., the members were again guests of the mill suppliers at a cocktail party in the Asheville Auditorium which was followed by the banquet at 7:30 p.m. R. C. Bullock was toastmaster and the guest speaker was Dr. Elwood C. Nance, president, University of Tampa, Tampa, Fla. Dr. Nance was introduced by Andrew F. Downey. Fred Boyce and William Brydges were both called on to give short talks. Harry Weston read a set of resolutions, thanking Ecusta Paper Co. and Champion Paper & Fibre Co. for their hospitality and generous support. Thanks were also expressed to the hotel managements and other organizations and individuals that contributed to the success of the meeting.

Charles Ackley, national president, presented Past Chairman Certificates to Andrew F. Downey and R. C. Bullock. Golf prizes were presented by Gene Bechard. Dancing followed the banquet.

NEW PAPER USES

TURKEYS IN THE BAG

Union Bag and Paper Corp. is manufacturing a turkey sack to carry the Eastern States Farmers' Exchange selling message along with an eye catching, clear, sharp, design. Names and addresses of the individual members may be slugged in under the print copy.

These sacks are of duplex construction and are made from wet strength, water repellent paper. These features, combined with a special sift proof bottom cut off, provide protection against staining through and offers additional resistance to puncturing and chafing.

Eastern States members report that these sacks do an excellent job in serving both as a "carry home" package as well as a continuing merchandising device for their turkey promotion.

FINANCIAL RECORD

PREFERRED STOCKS	Per Share Earnings Calendar Year 1949	Per Share Earnings 12 Mo. to Approx. 6/30/50	Indic. Annual Divid. Rate	Oct. 24 Approx. Market Price
Armstrong Cork Co. $3.75 Cum.	$40.95*	$48.14	$3.75	$102½
Armstrong Cork Co. $4.00 Cum. Conv.	40.95*	48.14	4.00	114
Celotex Corp. 5% Cum.	6.80c	8.75	1.00	16⅝
Champion Paper & Fibre $4.50 Cum.	60.09f	89.39	4.50	105½
Container Corp. of Amer. 4% Cum.	89.52	104.60	4.00	104½
Crown Zellerbach $4.00 Cum.	54.38c	61.85	4.20	128¾
Dixie Cup Co. $2.50 Cum. Conv. Cl. A	10.93	12.24	2.50	54
Flintkote Co. $4 Cum.	62.70	71.81	4.00	103½
Robert Gair Co., Inc. 6% Cum.	13.79†	15.86†	1.20	18¼
International Paper Co. $4 Cum.	224.55	264.19	4.00	105⅞
Kimberly Clark Corp. 4% Cum.	85.27	117.03i	4.50	106½
MacAndrews & Forbes 6% Cum.	61.59	62.97	6.00	143½
Mead Corp. 4½% Cum.	51.37	88.30a	4.25	92½
Mead Corp. 2% Cum. Conv. 2nd	21.35*	36.20a	2.00	60⅛
Paraffine Cos. Inc. 4% Cum. Conv.	56.46	59.81	4.00	99¼
Rayonier Inc. $2 Cum.	9.54	12.09	2.00	34¼
St. Regis Paper Co. 4.40% 1st A	30.74	52.38a	4.40	95¼
Scott Paper Co. $3.40 Cum.	51.15*	62.16*	3.40	98¼
Scott Paper Co. $4.00 Cum.	51.15*	62.16*	4.00	106½
Sutherland Paper 4½% Conv.	46.92	59.24	4.25	115½
U. S. Gypsum Co. 7% Cum.	283.37	340.24	7.00	183¼
United Wallpaper Inc. 4% Cum. Conv.	2.14	(d)15.98	2.00	23¾
West Virginia Pulp & Paper 4½% Cum.	61.28c	61.06i	4.50	110½
COMMON STOCKS				
APW Products Co.	(d)0.81	(d)0.01	—	4½
American Writing Paper Corp.	.04	0.50	—	7
Armstrong Cork Co.	6.57	7.84	$3.00	50½
Celotex Corp.	1.65c	2.20	1.00	14⅞
Certain-Teed Prods. Corp.	2.84	3.24	1.00	14⅜
Champion Paper & Fibre	5.15f	8.16	2.00	45⅞
Congoleum Nairn Co.	3.04	2.70	2.00	24½
Container Corp. of America	8.46	10.27a	4.00	62½
Crown-Zellerbach	6.02c	6.84	2.00	43½
Dixie Cup Co.	7.44	8.58	1.50	46¾
Eastern Corp.	0.04	1.64	(h)	18⅝
Flintkote Co.	4.33	4.95	2.50	25½
Robert Gair Co., Inc.	2.11†	2.30†	0.70	11⅜
Great Northern Paper Co.	4.87	3.75	2.80	46¾
International Paper Co.	7.12	8.14	2.50	46½
Johns-Manville Corp.	4.83	6.38a	2.50	43¾
Kimberly Clark Corp.	5.29	6.66i	1.80	43½
MacAndrews & Forbes Co.	3.64	3.77	3.00	40⅜
Marathon Corp.	3.29c	4.13i	1.40	35
Mead Corp.	4.10	7.32a	1.60	30¼
National Container Corp.	0.95	1.34	0.60	10¼
Paraffine Cos. Inc.	0.85	0.90	0.60	16⅝
Rayonier, Inc.	4.75	6.36	2.50	44½
Ruberoid Co.	8.72	9.06	3.25	50½
St. Regis Paper Co.	0.91	1.63a	0.60	10⅞
Scott Paper Co.	6.07	7.38	3.60	41⅝
Sutherland Paper Co.	4.62	5.64	2.75	44½
Union Bag & Paper Corp.	5.01	5.16	2.50	37
United Board & Carton	(d)1.61b	0.58j	—	13½
U. S. Gypsum Co.	13.51	16.29	9.00	108¼
United Wallpaper	(d)0.01	(d)0.55	—	2⅞
West Virginia Pulp & Paper	8.58c	8.36i	5.00	67

(a) 12 months to approximately 9/30/50
(b) Year ended 11/13/49
(c) Year ended 1/31/50
(d) Deficit
(f) 9 months to 12/31/49
(g) 12 months to approximately 4/30/50
(h) Declared 25c payable Sept. 1, 1950.
(i) 12 months to 7/31/50
(j) 12 months to 5/31/50.

(†) Includes domestic and Canadian subsidiaries and 60% equity in Southern Paperboard Corp.

British Columbia Pulp & Paper Co. has announced that it will clear up the arrears on its preferred stock by two payments of $28 each. The first payment is to be made November 1 to stockholders of record October 16 and the second payment on February 1 to stockholders of record January 15. Arrears now totalling $56 will be fully paid up after payment of the February 1 disbursement. The company declared a quarterly dividend of $1.75 on the preferred stock, payable November 1 to stockholders of record October 16.

Price Bros. & Co., Ltd., has summoned stockholders to meet in Quebec City on November 6 to approve the proposed four-for-one common stock split. A meeting on September 21 found directors of the firm voting to recommend the split to the stockholders.

At the present time, there are 547,518 common shares outstanding of an authorized issue of 679,084. The split would result in 2,190,072 shares outstanding and 2,716,336 shares authorized.

Container Corp. of America earnings:

For the Three Months Ended September 30	*1950*	*1949*
Earnings before Federal income taxes	$ 5,689,000	$3,806,000
*Provisions for Federal income taxes	2,389,000	1,446,000
Net earnings	$ 3,300,000	$2,360,000
Net earnings per share—Common Stock	$3.24	$2.28
For the Nine Months September 30		
Earnings before Federal income taxes	$13,375,000	$9,629,000
*Provisions for Federal income taxes	5,617,000	3,659,000
Net earnings	$ 7,758,000	$5,970,000
Net earnings per share—Common Stock	$7.54	$5.73

* Provision for Federal income taxes for 1950 computed at rate of approximately 42% as provided by the recently enacted Revenue Act of 1950. This reduces the previously reported six months earnings from $4,765,000 to $4,458,000.

Mead Corp. and subsidiaries report for 40 weeks ended October 1:

	40 weeks ended Oct. 1, '50	40 weeks ended Oct. 2, '49
*Earned per common share	$5.48	$2.26
Net sales	67,462,965	57,108,849
Net profit after taxes	4,325,310	1,986,658
Surplus after pfd. div.	3,970,223	1,616,242
Number common shares	724,753	716,200
	16 weeks ended Oct. 1, '50	**16 weeks ended Oct. 2, '49**
*Earned per common share	$2.45	$.68
Net sales	27,902,077	21,930,764
Net profit after taxes	1,918,394	634,621

* After preferred dividend requirements.

Rolland Paper Co., Ltd. has declared a regular quarterly dividend of $1.06¼ per share on preferred stock, payable December 15 to stockholders of record December 1, 1950.

St. Regis Paper Co. reports net sales for the nine months ended September 30 at $109,200,097, compared with $94,285,462 in the like period of last year. Net income, after provision for Federal taxes at the rate provided for in the 1950 tax bill, for the nine months period amounted to $7,003,924, against $3,284,394 for the corresponding nine month period of 1949.

Directors of the company at a meeting on October 18 declared a regular quarterly dividend of 15 cents a share on the common stock, plus an extra dividend of 10 cents, both payable December 1 to stockholders of record November 3. The regular quarterly dividend of $1.10 a share on the preferred stock was declared payable January 1, 1951, to holders of record December 1.

PRICES

The prices below reflect market quotations in New York at the mill level on standard grades. Most orders accepted, however, at price prevailing on date of shipment. Does not include spot offerings.

PAPER AND BOARD

Standard News, Delivered Ports

Rolls, contract, per ton $100.00/110.00
Sheets ..... 115.00/ —

F.o.b. Mills, C.l. Frt. allowed, dock, N. Y.

Kraft— per cwt. 40# base wgt.

Standard Wrapping Rolls ..... $7.00/$7.25
No. 1 Wrapping Rolls 7.75/ 8.00
Standard Bag 6.75/ 7.00

Tissues—per ream 24x36 (480) 10 lbs. 2500 lbs. or more

Wh. No. 1 Frd ..... $1.60 / —
Wh. No. 1 MG ..... 1.60 / —
Wh. No. 1½ ..... 1.55 / —
Wh. No. 2 ..... 1.45 / —
Kraft Non-Tar .....
White Non-Tar .....

Toilet— per case of 100 rolls—1 M sheets

Unbleached 4½x4½ ..... $5.90/ —
Unbleached 4½x5 ..... ‡ 6.05/ —
Bleached 4½x4½ ..... 7.10/ —
Bleached 4½x5 ..... ‡ 9.10/ —

Per Case of 50 rolls—2000 sheets

Unbleached 4½x4½ ..... $5.90/$6.25
Bleached 4½x4½ ..... 6.95/ —

Per Case of 100 rolls—1000 sheets

Facial, 4½x5, 2 ply ..... ‡ $8.95/$9.85

Paper Towels—per case of 3750.

Wh. Jr. M'tif'd 9⅜x9½ $5.65
Br. Sr. M'tif'd 10x12 ..... 4.00
Br. Jr. M'tif'd 9½x9¼ 3.50
Br. Jr. Sel. fold 10x10¼ 3.35
Blchd. 7½x11, 24/25 rolls ..... ‡ $6.65/$7.00

Manila, per cwt.

No. 1 Jute Tag sheets* ..... ‡ $16.55/18.55
Reg. Jute M.F. 40-lb., sheets* 15.00/17.00
Waxtone Manila ..... 8.75 list
Printing Manila ..... ‡ 10.50/12.00

* Less usual allowance for rolls.

WORLD WOOD PULP MARKETS

Fourth Quarter Contract Prices, Per Short Air-Dry Ton

	Varying freight allowances		Atlantic Ports		
	U. S.	Canadian	Swedish	Finnish	Norwegian
Groundwood	$75.00/ —	$70.00/ 75.00	†$82.50/ —		
Siderums Pulping News .	70.00/ —	70.00/ 75.00			
Soda, Bleached	130.00/ —	130.00/ —			
Sulphate, Bleached	128.00/167.50	141.00/ —	*165.00/167.50		Competitive
Sulphate, Unbl'd North'n		110.00/120.00	*135.00/165.00		
Sulphate, Unbl'd South'n	110.00/160.00				
Sulphite Blchd. (S'ftw'd)	128.00/145.00	135.00/138.00	*160.00/ —		Competitive
Sulphite, Blchd. (H'dw'd)	145.00/ —				
Sulfite, Semi-blchd.	128.00/ —				
Sulphite, Unbleached ...		117.00/120.00	*138.00/165.00		
Sulphite, Unbl'd (Glassine)		121.00/ —	*142.00/150.00		

* On dock. † Delivered.

Gummed Tape—per bdl., 500 bdls. or more.

90-lb. 375 ft. GSI ..... $6.60/ —
60-lb. 600 ft. GSI ..... 6.60/ —
35-lb. 800 ft. GSI ..... 7.59/ —
35-lb. 500 ft. GSO ..... 5.70/ —

Boards, per ton—

Filled News ..... $97.50/ —
Plain Chip ..... ‡ 95.00/ —
Blchd. Mla. L-d. Chip ..... ‡ 120.00/125.00
White Pat. coated .020 ..... ‡ 145.00/155.00
Kraft Liners 42 lb. ..... ‡ 112.50/115.00
Kraft Corr. .009 ..... ‡ 117.50/126.00
Binders Boards ..... 135.00/ —

The following prices are representative distributors' resale prices:

Rag Content Bonds and Ledgers—
White, 20 lb.

Bonds	4 Ctns.
	per cwt.
100% Rag Ex. No. 1	$64.55/$69.60
100% Rag	56.95/ 57.30
75% Rag	43.70/ 44.15
50% Rag	35.60/ 35.95
25% Rag	29.75/ 30.00

Ledgers	4 Ctns.
	per cwt.
100% Rag Ex. No. 1	$65.15/$66.35
100% Rag	58.20/ 58.75
75% Rag	44.95/ 46.20
50% Rag	36.95/ 37.30
25% Rag	31.00/ 31.35

Sulphite Bonds and Ledgers
White, 20 lb.

Bonds	4 Ctns.
	per cwt.
Watermarked	$18.15/$19.05
Plain	17.10/ 17.45

Ledgers	4 Ctns.
	per cwt.
Watermarked	$19.50/$20.30
Plain	18.55/ 18.75

White Book

Conversion Coated	Case
	per cwt.
No. 1	$21.65/$21.75
No. 2	20.15/ 20.40
No. 3	19.65/ —
Machine Coated	
No. 1	$16.90/ 17.15
No. 2	14.90/ 15.15
Unsurfaced	
No. 1 Antique (Watermarked)....	$17.15/ 18.65
Offset	16.15/ 16.90
A Grade E. F.	16.15/ —
A Grade S. C.	16.65/ 16.90
B Grade E. F.	15.40/ —
B Grade S. C.	16.15/ —

‡ Indicates a price change.

WASTE PAPER MARKET

The following quotations were gathered from major dealers in each market. They are an indication of the price range in which volume tonnage was moving on the date specified. Prices to mills, per ton, f.o.b. cars shipping point (includes brokers' fee.) ALL PRICES NOMINAL. SPOT OFFERINGS OR SPECIAL PACKINGS NOT INCLUDED.

	New York	Philadelphia	Boston	Chicago
	Oct. 11	Oct. 13	Oct. 21	Oct. 23
No. 1 Mixed Paper	$23.00/ 27.00	$24.00/ 25.00	$22.00/ —	$27.00/ —
Boxboard Cuts	23.00/ 25.00	20.00/ 25.00	19.00/ —	26.00/ —
Mill Wrappers	22.00/ 29.00	25.00/ 30.00	24.00/ 29.00	24.00/ —
No. 1 News	26.00/ 30.00	25.00/ 30.00	26.00/ —	30.00/ —
Over-issue News	29.00/ 32.00	20.00/ —	25.00/ 27.00	30.00/ —
Corrugated Containers ...	35.00/ 37.00	32.00/ 36.00	33.00/ 35.00	38.00/ —
New Corrugated Cuts	40.00/ 45.00	35.00/ 40.00	35.00/ 40.00	45.00/ —
Double Kraft Ld. Corr. Cuts ...	75.00/ 80.00	55.00/ 58.00	70.00/ 80.00	77.50/ —*
100% Kraft Corr. Cuts.....	85.00/ 90.00	— / —	— / —	95.00/ —
Used Kraft Bags	60.00/ 75.00	60.00/ —	50.00/ —	55.00/ —
No. 1 Brown Kraft Paper	55.00/ 60.00	65.00/ —	50.00/ 60.00	55.00/ —
Super Resorted Br. Kraft	62.50/ 70.00	80.00/ —	65.00/ 70.00	65.00/ —
New Br. Kraft Env. Cuts	110.00/125.00	100.00/ —	110.00/115.00	90.00/ —
New Br. Kraft Cuts	80.00/ 90.00	100.00/ —	85.00/ 90.00	85.00/ —
No. 1 Gilwd Shvs.	60.00/ 65.00	40.00/ 45.00	60.00/ —	40.00/ —
White Newsblanks	85.00/100.00	75.00/ —	80.00/ —	70.00/ —
No. 1 Flyleaf Shvs.	70.00/ 75.00	55.00/ —	65.00/ 75.00	80.00/ —
No. 1 Soft Wht. Shvs.	150.00/160.00	120.00/125.00	110.00/115.00	125.00/ —
Super Soft Wht. Shvs.	160.00/170.00	135.00/ —	115.00/125.00	135.00/ —
Hd. Wht. Shvs.	160.00/170.00	140.00/150.00	125.00/140.00	140.00/ —
Hd. Wht. Env. Cuts	175.00/ —	160.00/170.00	140.00/170.00	150.00/ —
New Manila Env. Cuts	100.00/120.00	100.00/ —	90.00/100.00	90.00/ —
Col. Tab Cards	70.00/ 80.00	70.00/ —	55.00/ 60.00	70.00/ —
Manila Tab Cards	115.00/130.00	125.00/ —	100.00/110.00	110.00/ —
No. 1 Mixed Ledger	60.00/ 70.00	65.00/ —	60.00/ —	70.00/ —
White Ledger	90.00/100.00	95.00/100.00	70.00/ 80.00	100.00/ —
No. 1 Book & Mag.†	32.00/ 33.00	25.00/ 35.00	30.00/ 35.00	28.00/ —
No. 1 Rep'd. Hvy. Books‡	45.00/ 50.00	33.00/ 45.00	40.00/ 50.00	45.00/ —

* Delivered. † Includes Time & Life; no coarse groundwood. ‡ Not to exceed 10% groundwood.

RAG MARKET

New Domestic Cotton Cuttings
(Prices to Dealers, F.o.b. Ship. Pt.)

ALL PRICES NOMINAL

No. 1 White Shirts	$17.00/$18.00
No. 1 Unblchd. Muslins	15.50/ 17.50
Blchd. Canton Flannels	15.00/ 16.00
No. 1 Lt. Silesias	10.00/ 11.00
No. 1 Lt. Prints	7.50/ 8.50
Wht. Bk. Blue Overalls (Bichable)	11.00/ 12.00
No. 1 Blue Overalls	5.00/ 5.25
Fancy Shirts	6.00/ 6.50
No. 1 Washables	5.00/ 5.50
Suntan Khaki Cuts	9.00/ —
Mixed Khaki Cuts	6.00/ 7.00
Corduroy Cuts	4.50/ 5.00
Cottonades	4.50/ 5.00
Blchd. Underwear Cuts	16.00/ 17.00
Unblchd. Underwear Cuts	15.00/ 16.00

Old Domestic Cotton Rags
(Prices to Dealers, F.o.b. Ship. Pt.)

ALL PRICES NOMINAL

	Per 100 lbs.
Mixed White	$4.50/$5.00
Cotton Pants & Overalls	3.75/ 4.25
Thirds and Blues, Repacked	3.50/ 3.75
No. 1 Roofing Rags	2.40/ 2.65
No. 2 Roofing Rags	2.00/ 2.25
No. 3 & 4 Roofing Rags	1.90/ 2.15
Roofing Bagging	1.90/ 2.15

New Foreign Cotton Cuttings
(Prices to Mills, F.o.b. Dock, N. Y.)

	Per 100 lbs.
New Dark Cuttings	$4.25/$4.75
New Mixed Cuttings	4.50/ 5.00
Light Silesias	7.50/ 8.00
Light Flannelettes	7.50/ 8.00
New White Cuttings	nominal
New Unbleached Cuttings	nominal

Fancy Shirt Cuttings	6.00/ 7.00
Light Prints	6.00/ 7.00
Bleachable Khaki, No. 1	5.50/ 6.00
Unbl. Khaki, No. 1	4.50/ 5.00

Old Foreign Rags

(Prices to Mills, F.o.b. Dock, N. Y.)

	Per 100 lbs.
No. 1 White Cottons	$6.50/$7.50
No. 2 White Cottons	5.50/ 6.00
No. 3 White Cottons	4.00/ 4.50
No. 4 White Cottons	3.50/ 3.75
Extra Light Prints	4.50/ 5.00
Old Light Prints	4.00/ 4.25
Med. Light Prints	3.50/ 3.75
Dutch Blue Cottons	3.75/ 4.00
Checks and Blue	3.00/ 3.50
Linsey Garments	2.75/ 3.00
Dark Cottons, European	2.25/ 2.50
Dark Cottons, Egyptian	2.15/ 2.30
Old Shopperies	2.10/ 2.25
New Shopperies	2.25/ 2.50

Bagging

(Prices to Dealers, f.o.b. N. Y.)

	Per 100 lbs.
Foreign Gunny	$7.00/$8.00
Domestic Gunny, No. 1	7.00/ 8.00
Heavy Wool Tares	6.75/ 7.50
Foreign Manila Rope	4.25/ 4.50
Domestic Manila-Rope	5.25/ 5.50
Jute Strings	6.25/ 6.50
No. 1 Sisal Strings	3.50/ 4.25
Mixed Strings	nominal
Paper Mill Tares	5.25/ 5.75
No. 1 Scrap Burlap	
Foreign	4.75/ 6.00
Domestic	5.50/ 6.50
Austr. Wool Pouches	6.75/ 7.50
New Burlap Cuttings	7.00/ 7.50

MATERIALS

Aluminum, sulfate:		
coml. bags, wks.	cwt.	1.65
iron-free c.l.		2.75
Alcohol, ethyl:		
tax free, dms. c.l.	gal.	.62 / .97
dedl. East Miss.		
Casein, acid-prec.:		
dom. sh. pt. c.l.	lb.	.36 / .38
imp. ex dock	lb.	.33 / .33½
Caustic soda:		
c.l. wks. solid, 76%, cwt.		3.35
flak. & grd. 100-lb. drums		3.75
liquid 50% tanks		2.55
liquid 70% tanks		2.65
China clay:		
dom. air-float. filler, c.l. wks.	ton	10.00
water-washed		11.00
coating		16.00 /30.00
imported, ex whse.	short ton	15.20 /28.35
Chlorine:		
single-unit tanks, works	cwt.	2.70
multi-unit	cwt.	3.20 / 4.40
Formaldehyde:		
USP, tnh. dms, c.l. wks.	lb.	.0600/ .0625
l.c.l. E. wks.		.0650/ .0675
Fuel oil:		
Bunker C, No. 6 Cal. hvy tanks, refinery	bbl.	1.55 / 1.60
light	bbl.	2.05 / 2.10
Hydrogen peroxide:		
USP, 35% cbys. E. of Miss.	lb.	.24½/ .25½
Lime:		
hydrated, bags, wks. Buffalo	ton	13.50
Rosin:		
B gum, drms, c.l. Savan.	cwt.	4.10
G, do.	cwt.	7.13
H, I, K	cwt.	7.20
FF wood, do.	cwt.	5.90
Rosin size:		
70%, gum & pale grds, tank cars, south, sh. pt.	cwt.	6.25 / 6.45
Salt cake:		
dom. bulk, c.l. wks.	ton	17.00
wks. frt. all	ton	20.00 /22.00
Soda ash:		
light, 58%, bags, wks.		1.50
bulk	cwt.	1.20
Sodium silicate 40°:		
turbid, c.l. wks.	cwt.	1.20
l.c.l. wks.		1.55 / 1.95
Sodium peroxide:		
dms. c.l. E. of Miss.	lb.	.19
l.c.l. do.	lb.	.19½/ .20
Soybean, protein:		
chem. isol, wks. c.l.	lb.	.24 / —
Cinn. and Chic.		
Sulfuric acid:		
60° Be. cbys. cl. wks.	cwt.	1.75 / —
l.c.l. wks.	cwt.	2.05 / 2.60
Sulfur:		
crude, c.l. mines, contract,	long ton	18.00 /22.00
f.o.b. vessels Gulf		19.50 /21.50
Export, f.o.b. Gulf		22.00 /25.00
Sulfur dioxide:		
liquid, coml. cyl. wks.	lb.	.09
multi-unit cars	lb.	.0535
Starches:		
pearl corn, bags, c.l. Chic.	cwt.	5.47 / —
white dextrines, c.l. Chic.	cwt.	6.74 / —
potato, Idaho, c.l. wks.	cwt.	5.00 / —
potato, Maine, c.l. wks.	cwt.	5.00 / —
tapioca, conv. dextrines	cwt.	6.75 / 7.25
medium grds. Gulf and East Coast ports		5.50 / 6.25
low, Siam, on dock N. Y.		4.75 / 5.25
Talc:		
domestic, 50-lb. sacks, c.l. wks.	ton	25.00 /30.00
Titanium dioxide:		
anastase, c.l. deld., bags	lb.	.19½
l.c.l. deld.	lb.	.20 / .20½
rutile, c.l. deld.	lb.	.21½
l.c.l. deld.	lb.	.22½

N.B.: For special market conditions, see *Trends*.

IMPORTS

IMPORTS AT NEW YORK

Week Ending Oct. 21

Newsprint

News Syndicate Co., Ted. Thorold, 2259 rolls.
News Syndicate Co., Mimi, Thorold, 2243 rolls.
R. A. Olsen, G.D.D., Donnacona, 329 rolls.
(———), Cutler, Three Rivers, 3492 rolls.
(———), Cornerbrook, Cornerbrook, 3300 rolls.
R. A. Olsen, G.D.D., Donnacona, 330 rolls.
(———), Donpaco, Donnacona, 328 rolls.
Madden Reeve Angel & Co. Inc., Mormacwave, Helsingfors, 584 rolls.
(———), Fort Avalon, Cornerbrook, 3627 rolls.

Wrapping Paper

Jay Madden Corp., Mormacwave, Helsingfors, 420 rolls (sulphate).

Gummed Paper

B. F. Drakenfeld & Co., Parthia, Liverpool, 26 cs., 14 drums.

Tissue Paper

B. F. Drakenfeld & Co., Parthia, 10 cs. (gauze carbonizing).

Wallpaper

C. A. Haynes & Co., Parthia, Liverpool, 423 ctns.
Taub Hummel & Schnall, Parthia, Liverpool, 771 rolls.
C. A. Haynes & Co., American Manufacturer, Liverpool, 130 ctns.

CORROSION PLAYS NO FAVORITES

You must PROTECT OR PAY ...you have no other choice

No business escapes the effects of corrosion. It costs industry over $6,000,000,000.00 annually. Yet much of this costly damage might be avoided by taking just two simple steps –

1. Check the danger points in your plant–manufacturing equipment, piping, valves, tanks, motors, and all similar items.
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6-50a

AMERCOAT CORPORATION
A Division of
American Pipe and Construction Co.
4809 Firestone Blvd., South Gate, California

Taub Hummel & Schnall, American Manufacturer, Liverpool, 2 cs.
Taub Hummel & Schnall, Mosnes, Yokohama, 2 cs.

Parchment Paper

Meadows Wye & Co., Queen Elizabeth, Southampton, 1 cs.
Meadows Wye & Co., Mauretania, Southampton, 1 cs.

Baryt Paper

W. Reimerdes, Black Hawk, Hamburg, 18 cs.

Boxboard

General Motors Overseas Operations, Oklahoma, Kotka, 126 bdls.

Cardboard

Jay Madden Corp., Oklahoma, Kotka, 263 rolls (folding).

Paper Napkins

B. Bergkvist, Oklahoma, Gothenburg, 4 cs.

Serviettes

(———), Parthia, Liverpool, 8 crates.

Sulphite Paper

B. M. Herde, Stavangerfjord, Oslo, 14 bls.

Cellophane Paper

Guillet & Hattig, America, Southampton, 2 pkgs.

Surface Coated Paper

Gevaert Co. of America, Lindi, Antwerp, 34 cs.

If your problem is

FILTERING

Consult

HARDINGE

Automatic Backwash Rapid SAND FILTERS for Paper Mill Water Supply or "White Water"

For high removal of non-settling or slow-settling suspended matter. Self-cleaning sand bed. No shutdown necessary for backwashing. Bulletin 46-14.

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SAN FRANCISCO 11—24 California St. • 200 Bay St.—TORONTO 1

Photo Paper

J. J. Gavin & Co., Queen Mary, Southampton, 7 cs.
Alco Photo Supply Corp., Queen Mary, Southampton, 14 cs.

Writing Paper

American Express Co., Queen Mary, Southampton, 1 cs.
International Expediters, Queen Mary, Southampton, 1 cs.
All Transport Inc., America, Southampton, 3 cs.

Fibre Board

Aisner Chemical Co., Oklahoma, Gothenburg, 88 bls.

Drawing Paper

Globe Shipping Co., America, Southampton, 1 cs.

Manifold Paper

Mohegan International Corp., Westerdam, Rotterdam, 82 bls.

Miscellaneous Paper

Mercury Paper, Inc., Axeldyk, Antwerp, 2 cs.
C. Hartwig, Batory, Gdynia, 24 cs.

Rags, Baggings, etc.

A. W. Fenton Co., Exochorda, Marseilles, 29 bls. rags.
(———), Exochorda, Marseilles, 163 bls. rags.
A. de Vries Trading Corp., Exochorda, Marseilles, 73 bls. rags.
J. Eisenberg, Oriente, Havana, 7 bls. rags.
Madden Reeve Angel & Co. Inc., Mormacwave, Helsingfors, 67 rolls paperwaste.
E. J. Keller Co. Inc., Algonquin Victory, Antwerp, 190 bls. old bagging.
A. de Swaan, Axeldyk, Rotterdam, 71 bls. jute rags.
A. Siegle Corp., Parthia, Liverpool, 34 bls. new wool rags, 5 bls. wool thread waste, 81 bls. old bagging.
National City Bank, Italia, Genoa, 278 bls. old bagging.
Darmstadt Scott & Courtney, American Manufacturer, Manchester, 69 bls. old bagging.
E. Butterworth & Co. Inc., American Manufacturer, Manchester, 66 bls. old bagging.
A. Bloch, American Manufacturer, Manchester, 33 bls. new cotton cuttings.
(———), American Manufacturer, Manchester, 50 bls. cotton waste, 66 bls. new light prints.
Chase National Bank, American Manufacturer, Manchester, 68 bls. old bagging.
E. Lang, American Manufacturer, Manchester, 60 bls. bagging.
J. Cohen & Son, American Manufacturer, Manchester, 19 bls. new cotton rags.
E. Butterworth & Co. Inc., American Manufacturer, Liverpool, 22 bls. old bagging.
Loumar Textile By Products Co., Black Hawk, Antwerp, 110 bls. old bagging.
New England Waste Co., Steel Artisan, Bombay, 125 bls. old rags.
Harris Goldman Co., Hellenic Sky, Naples, 130 bls. old rags.
(———), Helletic Sky, Naples, 100 bls. waste bagging.
Irving Trust Co., Hellenic Sky, Naples, 74 bls. bls. cotton waste pickers.
National City Bank, ———, Aalborg, 70 bls. paperstock.
Green Textile Associates, Mosnes, Tsingtal, 95 bls. cotton waste pickers, 95 bls. cotton fly waste.

Old Rope

C. Smiles, American Manufacturer, Manchester, 201 bls. hemp cordage waste.

Casein

Chase National Bank, Pero D'Alenquer, Ponta del Gada, 229 bags (lactic).

Woodpulp Boards

Absorbo Beer Pad Co., Extavia, Trieste, 250 bls.
Jay Madden Corp., Oklahoma, Kotka, 366 bls. (solid white beer mat pads).

IMPORTS AT NEWARK

Week Ending Oct. 21

Madden Reeve Angel & Co. Inc., Oklahoma, Kotka, 285 rolls newsprint.
Pulp Sales Corp., Oklahoma, Kotka, 3300 bls. prime unbleached sulphite pulp.
Pagel Horton & Co. Inc., Oklahoma, Gefle, 500 bls. dry sulphite pulp.
Pulp Sales Corp., Saimaa, Kotka, 3730 bls. sulphate pulp, 3550 bls. sulphite pulp.

IMPORTS AT ALBANY

Week Ending Oct. 21

Pulp Sales Corp., Oklahoma, Kotka, 500 bls. prime unbleached sulphite pulp; 4526 bls. prime unbleached sulphate pulp.
Castle & Overton, Inc., Idefjord, Tofte, 1800 bls. dry bleached sulphite pulp, 305 bls. bleached sulphate pulp.
Castle & Overton, Inc., Idefjord, Drammen, 2350 bls. dry bleached sulphite pulp.
Pulp Sales Corp., Saimaa, Rauma, 265 bls. unbleached sulphite pulp, 3200 bls. sulphite pulp.
Pulp Sales Corp., Saimaa, Kotka, 1040 bls. sulphate pulp, 520 bls. sulphite pulp.

IMPORTS AT BOSTON

Week Ending Oct. 21

International Purchasing Co., Algonquin Victory, Antwerp, 75 coils old rope.
F. C. Strype, Axeldyk, Rotterdam, 49 cs. uncoated white printing paper.
J. A. Conkey, Parthia, Liverpool, 23 cs. tissue paper.
Leigh Textile Co., American Manufacturer, Manchester, 308 bls. cotton waste.
E. Butterworth & Co. Inc., American Manufacturer, Manchester, 72 bls. old bagging.
Leigh Textile Co., Pres. Monroe, Bombay, 250 bls. cotton waste.
Stone & Downer Co., American Manufacturer, Liverpool, 21 cs., 4 drums gummed paper.
Greenberg Bros., American Manufacturer, Liverpool, 3 cs. wallpaper.
Elliott Addressing Machine Co., Anna Maersk, Kobe, 5 cs. tengujo paper.
Gottesman & Co., Inc., S.S. Bernhard Ingelison, 498 bls. semi blchd. kraft pulp.

IMPORTS AT PHILADELPHIA

Week Ending Oct. 21

Madden Reeve Angel & Co., Mormacwave, Kotka, 1691 rolls newsprint.
Chase National Bank, Algonquin Victory, Antwerp, 246 bls. jute waste.
(———), Edam, Rotterdam, 71 bls. rag cuttings.
New England Waste Co., Steel Artisan, Bombay, 100 bls. old rags.
C. Kurz, Hellenic Sky, Naples, 137 bls. old cotton rags.
Madden Reeve Angel & Co. Inc., Oklahoma, Kotka, 139 rolls newsprint.
Pulp Sales Corp., Oklahoma, Kotka, 1524 bls. white dry mechanically ground woodpulp, 525 bls. prime bleached sulphite pulp.
Gottesman & Co., Inc., S.S. Toledo, Sundsvall, Sweden, 428 bls. unbleached sulphite pulp.

IMPORTS AT BALTIMORE

Week Ending Oct. 21

Pulp Sales Corp., Mormacwave, Kotka, 219 rolls paper waste.
Jay Madden Corp., Mormacwave, Helsingfors, 85 rolls cardboard.

E. J. Keller Co. Inc., Edam, Rotterdam, 41 bls. new rags.
New England Waste Co., Steel Artisan, Bombay, 450 bls. cotton waste.
(———), Hellenic Sky, Genoa, 63 bls. old dark cotton rags.
Madden Reeve Angel & Co. Inc., Oklahoma, Kotka, 271 rolls newsprint.
Pulp Sales Corp., Oklahoma, Kotka, 2062 bls. white dry mechanically ground woodpulp.
Jay Madden Corp., Oklahoma, Kotka, 85 rolls bleached white cardboard.
Pulp Sales Corp., Saimaa, Rauma, 195 bls. unbleached sulphate pulp.
Jay Madden Corp., Saimaa, Kotka, 206 rolls white woodpulp boards.
Pulp Sales Corp., Saimaa, Kotka, 1970 bls. sulphite pulp.

IMPORTS AT NORFOLK

Week Ending Oct. 21

(———), Edam, Rotterdam, 58 bls. old bagging.
J. J. Rozendaal, Black Hawk, Antwerp, 135 bls. old bagging.
A. de Vries Trading Corp., Black Hawk, Antwerp, 245 bls. jute waste.

FORESTRY

SCALING OF PULPWOOD

RANDOLPH, N. H.—Members of the Northeast Pulpwood Research Center and of the Northeastern Technical Committee of the American Pulpwood Assn. met jointly at the Ravine House, Randolph, on October 4 and 5, to discuss "Scaling of Pulpwood." Several of the pulpwood companies represented at this meeting had their chief scalers attend and participate in the discussions. While the group did not conduct any field trips in connection with this program, it did review the display of scale rules, measuring sticks, scaling forms, tables, and instructions which were on view during the meeting.

The discussion phase of the meeting was opened by the chairman, R. R. Drummond of the Oxford Paper Co., calling on B. B. Garland, head scaler of the Hollingsworth & Whitney Co., to present his paper entitled "Methods and Techniques Practiced in the Actual Measurement of Pulpwood." This paper and the discussion which followed it dealt entirely with the problems involved in determining the contents of piles of pulpwood in terms of cords of 128 cubic feet. This was followed by a panel discussion on "Methods and Techniques Practiced in Calculating Deductions and Cull in Measured Piles of Pulpwood." D. B. Demeritt, of the Dead River Co., was leader of this discussion.

The group of more than 50 members attending this session then devoted their attention to a paper delivered by Harold S. Mountain, chief scaler of the Brown Co. It dealt with the methods of determining the solid wood content of a measured quantity of pulpwood and the significance of its proper evaluation.

The meeting was closed with a review of the outstanding features of pulpwood scaling practices employed by pulpwood companies in the other regions of the United States. This was covered by W. S. Bromley, Forest Engineer of the American Pulpwood Assn.

JOINT FORESTRY MEETING

EAGLE RIVER, Wis.—The joint meeting of the American and Canadian Forestry Assn. here, October 9-11, has gone into the record books as one of the most profitable, from the standpoint of educational advantages, in the long histories of both associations. The American Forestry Assn. observed its 75th anniversary at the meeting while the Canadian Forestry Assn. marked its 50th birthday.

The attendance at the northwoods event gives an idea of the exceptional interest displayed in the gathering. It has been estimated that more than 700 persons, comprising members, guest forestry students from six midwest colleges, participating conservation experts, and conservation-minded individuals, took part in the three-day affair.

Folke Becker, president of Rhinelander Paper Co., president of Trees for Tomorrow, Inc., and chairman of the committee on general arrangements, expressed the belief that the joint meeting, having broken with tradition, has undoubtedly set a new pattern for forestry meetings in the future.

He said that instead of the usual indoor sessions in city hotels, the northern Wisconsin gathering was arranged so that those in attendance were provided with a first hand demonstration of progressive management of natural resources.

BERGSLAGET

The most recent issue of this publication of Stora Kopperberg is devoted to its American friends and connections. Two features of interest to paper makers are the stories of Hollingsworth and Whitney, its first pulp customer, and the setting up of Stora's American Company.

NEW LITERATURE

Metropolitan Life Ins. Co. Policyholders Service Bureau. Report, "Manpower Planning for National Emergency." Designed to assist management in locating the most likely problem areas and how to make best emergency use of available manpower.

American Forest Products Industries, Inc. Booklet, "Forest Industry Bibliography." Lists and briefly describes educational materials available from forest industry sources.

Union Metal Mfg. Co. Catalog No. 77, "Union Metal Materials Handling Equipment." Features recently-designed single units and skid-box-pallet combinations with explanation of their intended uses.

Asten-Hill Mfg. Co. Bulletin 650, "The Why and the Wherefore of Asten Dryer Felts."

The Wilbur & Williams Co. Maintenance Portfolio. Analyzes maintenance problems of equipment and buildings and makes recommendations for economical upkeep.

National Planning Assn. 8th Case Study, "Causes of Industrial Peace Under Collective Bargaining." Devoted to a study of the Marathon Corp. Tells how constructive and reasonable attitudes of employers and union representatives toward bargaining are more important than outside factors.

The Patterson Foundry & Machine Co. Illustrated Catalog No. 505, "Agitating and Mixing Equipment."

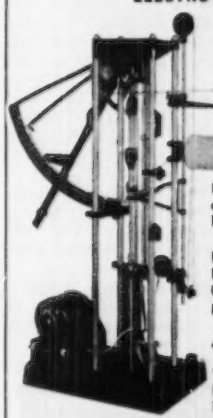
Photoswitch, Inc. Bulletin PE 505, "Photoelectric Smoke Detector." Features its use for air conditioning duct systems.

Newsprint Service Bureau. "Brochure, "World Production and Distribution of Newsprint Paper, 1949," by Vernon L. Tipka, Sec., N.S.B., in cooperation with the Forest Products Branch, Office of Industry and Commerce, U.S. Dept. of Commerce. Based on reports from Foreign Service Officers throughout the world.

William Bond Wheelwright. Book, "Practical Paper Technology," 128 p. price $2.25. Comprised of lectures given at the Dept. of Paper Engineering, Lowell Textile Institute in 1950 by Mr. Wheelwright. A reference book for individual use or for class work.

THWING-ALBERT

ELECTRO-HYDRAULIC TENSILE STRENGTH TESTERS



for Paper and Allied Industries

Multiple Ranges 0-15-50-150 pounds

Accessories for Elongation Recording or Indicating

Sample Sizes 15 mm to 2". Ideal for Zero Span, Finch Wet Strength and Finch Edge Tear Testing. Ask for Bulletin P-478

THWING-ALBERT INSTRUMENT COMPANY

5366 Pulaski Ave. Philadelphia 44, USA

108

AMERICAN PAPER AND PULP ASSOCIATION'S PAPER AND PRODUCTION RATIO REPORT

(Production as per cent of six-day capacity)

COMPARATIVE WEEKLY SUMMARIES

	Sept. 16	Sept. 23	Sept. 30	Oct. 7*	Oct. 14
1950	108.9	106.8	106.2	105.3r	107.6
	Sept. 17	Sept. 24	Oct. 1	Oct. 8	Oct. 15
1949	*94.0*	*94.9*	*96.3*	*90.5*	*97.1*

COMPARATIVE MONTHLY SUMMARIES

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year Avg.
1949	*94.6*	*92.8*	*89.1*	*85.1*	*82.7*	*78.6*	*72.8*	*87.5*	*89.7*	*96.0*	*98.2*	*89.8*	*88.0*
1950	97.6	101.1‡	102.6‡	100.9‡	101.8‡	103.2‡	90.8‡	105.8‡	101.7‡				

* Weekly capacity base increased by 349 tons.
r Revised.
‡ Preliminary.

COMPARATIVE YEARLY SUMMARIES

	1943	1944	1945	1946	1947	1948	1949	1950
Year to Date	88.3	88.2	88.8	100.8	103.8	97.0	86.8	100.7
Year Average	87.3	88.1	89.4	100.1	104.3	96.2	88.0	

PAPERBOARD OPERATING RATIOS†

	Sept. 16	Sept. 23	Sept. 30	Oct. 7	Oct. 14
1950	100	101	103	100	102
	Sept. 17	Sept. 24	Oct. 1	Oct. 8	Oct. 15
1949	*92*	*91*	*94*	*92*	*94*

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year Avg.
1949	*88*	*85*	*79*	*79*	*78*	*75*	*64*	*86*	*87*	*94*	*95*	*83*	*83*
1950	88	92	91	92	91	94	82	100	96				

All of the above data is based on tonnage reported to American Paper and Pulp Association. Does not include mills reporting to National Paperboard Association, except in isolated cases where both paper and paperboard are produced and separate tonnage figures are not readily available. Does not include mills producing newsprint exclusively.

† Per cents of operation based on "Inch-Hours" reported to the National Paperboard Association.

Lily-Tulip Cup Corp. Results of Survey, "People Prefer Paper Service," made by Facts Finders Associates, Inc.

Omega Machine Co. Bulletin No. 20-G14, "Universal Feeders." Includes typical arrangements, installations and specifications; special features and applications.

The Babcock & Wilcox Co. Brochure G-72, "B & W Integral-Furnace Boiler, Type FM." Highlights their new shop-assembled boiler for unit shipment.

Metalweld, Inc. Bulletin, "Metallizing." Describes process for making mechanical repairs and protecting surfaces against corrosion and contamination.

Lithgow Corp. Bulletin, "Lithcote Coating and Linings." Sales copy on applications to chemical and pulp and paper industries, tank cars, etc.

THE H. K. FERGUSON COMPANY

PAPER MILL ENGINEERS & BUILDERS

Complete Service for Design, Construction, Equipment Installation, Engineering Reports and Surveys

Executive Offices
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19 Rector St., New York 4 M & M Bldg., Houston
120 S. La Salle St., Chicago 2975 San Fernando Road, Los Angeles 21 E. 12th St., Cincinnati

New Materials

Chemical Resistant Coatings

Duramite coatings are described as easily-applied solutions of chemically inert resins offering exceptional adhesion and heat resistance. Most acids, alkalies and other highly corrosive materials are said to be without effect on these products. A specially compounded primer promotes good adhesion to any clean surface, and one group has been engineered to withstand temperatures to 300°F. The line includes high and low temperature products, maintenance coatings for corrosive conditions, concrete and masonry finishes, floor and custom-made coatings, all in various colors.

Medium Capacity IE Resin

A medium-capacity, phenolic type, cation exchange resin is announced. Furnished in granular form, the new Amberlite (IR-105G) combines the hydraulic behavior of IR-100 with the high capacity and regeneration efficiency of IR-105, says the producer. It has replaced those products in the company's series of ion exchange resins. Available also in sodium form for water softening.

Ductile Iron Castings

Magnesium-treated gray iron castings are being manufactured in five basic grades so that the widest possible advantage may be obtained from the factors of high strength and ductility. The different grades of ductile iron may be used either in the as-cast condition or with suitable heat treatments to provide specific properties. Known as BlaCaloy, the new iron combines product weldability with process advantages of cast iron, such as castability, machinability, corrosion resistance and economy. In contrast to the relative brittleness of ordinary gray iron, one of its outstanding characteristics is its ductility or toughness. The combination of high strength and ductility approaches that of cast steel, it is stated.

Obituaries

E. Ashley Crowell, 71, vice-president and general manager of Carter Rice & Co., Corp., paper merchants, Boston, died October 19.

Charles U. Davis, 77, one of the founders of the Davis & Cannon Paper Co. and in recent years active in the Cleveland Paper Co., died October 21.

Harry Slocum Lewis, 68, Beaver Falls, N. Y., died October 26 in New York City. He was president of J. P. Lewis Co., Beaver River Power Co., Latex Fibre Industries, director of U. S. Rubber Co., Niagara Mohawk, St. Regis Paper, Payne Jones, Smith Lee Corp., and a trustee of Clarkson and Syracuse University.

Mr. Lewis was the developer of Beaver Board, the forerunner to the vast building board industry. He was active with the late Harry P. Gould in the organization of Donnacona Paper Co. His death removes from many North Country organizations a source of wise counsel, sound judgment and enthusiasm for a job well done.

James Murray, 64, died suddenly October 23. He was connected with Martin Cantine Co. for twenty years. For approximately the last fifteen years, he was mill superintendent. Previously he held the position of chief chemist. He is survived by his widow Doris and one daughter.

Paul J. Riche, 51, New York sales representative of Crane & Co., Inc., fine paper manufacturers of Dalton, Mass., died recently at his home, 183 Longview avenue.

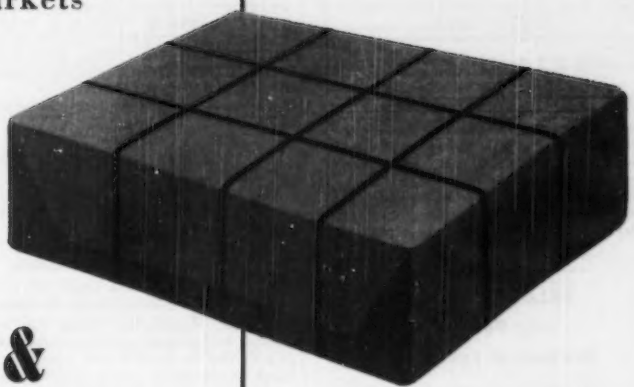
WITH OUR SALES FORCE COVERING FIVE STATES we are in a position to do an excellent job for any mill interested in carload tonnage.

Excellent established contacts in Southern New Jersey, Eastern Pennsylvania, Maryland, District of Columbia and Virginia assure you of an outlet for contract tonnage to converters.

Full investigation of our organization is invited. Write or wire Box No. 50-496, care Paper Trade Journal. N-2

Lyddon & Co.

exporters of wood pulp
to all world markets



Parsons & Whittemore

paper exporters
wood pulp

London
Paris
Zurich
Stockholm
Oslo
Sousse
Montreal
Buenos Aires
Sao Paulo

10 East 40th Street, New York 16, N. Y.

CLEARING HOUSE

HELP WANTED

MEN WANTED
Positions Open

Manager Mid-West paper mill; manager cylinder mach. mill in Canada; general supt. cylinder and foundrinier mach. board and corrugated paper mill Mid-West; superintendents and assistant superintendents asbestos cement and roofing felts; manager New England pulp mill; paper converting foreman for Canada; 2 cylinder machine foremen; coating room foreman; beater engineers; chemists, chemical engineers and laboratory men, one chemist familiar with de-inking.

Machine tenders and back tenders; mechanical and civil engineers; master mechanics; boss pipe fitter (Canada); cost accountant and timestudy man (New England); office manager (New England); designers and draftsmen; chief engineer Northern New England mill.

We invite correspondence (confidential) with mills seeking executives and with executives seeking new positions.

CHARLES P. RAYMOND SERVICE, INC.
294 Washington St., Boston 8, Mass.
O-26

WANTED CHEMICAL ENGINEER OR CHEMIST: Opening in Midwestern Rag Content and Specialty Mill. Control and development work both laboratory and mill scale. Experience in reproduction papers preferred. Our employees know of this ad. Address Box 50-523 care Paper Trade Journal.
N-2

SALES ENGINEER
For
Mechanical Equipment

Chemical Engineer 30 years old or under, with enough selling experience to know he wants to sell—and can sell. Equipment produced by small, but the outstanding, manufacturer in its field for Paper and Textile industries. Will headquarter in Miami Valley of Ohio. Write full details and references first letter, including salary requirements and recent snapshot. Our employees know of this advertisement.

Box No. 50-516 Paper Trade Journal. O-26

ASSISTANT SUPERINTENDENT

We have been looking for an Assistant Superintendent for a long time but haven't found the right man. If you are a young man with a combination of technical training and paper machine experience, this may be the right opportunity for you to get ahead. We will pay what you are worth. Write Box 50-514 care Paper Trade Journal.
N-16

TOUR BOSS wanted for Board Mill in East. Must have experience on folding grades. Address Box 50-473 care Paper Trade Journal. TF

HELP WANTED

WANTED

Experienced Laboratory Technician for 2 machine Mid-Western Mill on Book and Offset grades. Men will be required to work swing shifts in maintaining quality controls of beaters, finished paper, and de-inking plant. Men with leadership ability will have opportunity to advance to Supervisory positions. All replies will be held in strict confidence.

Address Box 50-498, care Paper Trade Journal.
N-2

"CONVERTING FOREMAN EXPERIENCED IN CONVERSION OF TOILET TISSUE, TOWELS, NAPKINS, SHEETING, CUTTING LIGHTWEIGHTS. FULL RESUME PLEASE TO BOX NO. 50-486, CARE PAPER TRADE JOURNAL.
O-26

WANTED — SALES ENGINEER — Experienced in Pulp and Paper Mills, for sales and service work. Excellent opportunity with old established machinery manufacturer. In reply, give resume of education, experience and current salary. Address Box 50-512 care Paper Trade Journal. TF

ELECTRICAL DRAFTSMAN

Four machine Wisconsin paper mill has opening for ambitious young Electrical Engineer. Should have paper mill or similar background and knowledge of N.E.C. and be familiar with plant electrical requirements, power and control equipment and wiring, both A.C. and D.C. Industrial electronic experience helpful. Salary based on individual ability with excellent opportunity for advancement. Replies confidential. Write Box 50-484, care Paper Trade Journal.
O-26

PRODUCTION CHIEF

Paper converting, nationally known. Printing, coating, gumming, laminating, finishing operations. Lifetime position for top-flight production executive. Our people know of this ad. Send full details confidentially to President, Box 50-443, care Paper Trade Journal. TF

MASTER MECHANIC

For converting mill near Madison, Wisconsin. All around practical man wanted with plenty of experience and know-how. Replies confidential. Our employees know of this ad. Write Box 50-481, care Paper Trade Journal. O-26

HELP WANTED

SALARIED POSITIONS $3,500—$35,000

If you are considering a new connection communicate with the undersigned. We offer the original personal employment service (40 years recognized standing and reputation). The procedure, of highest ethical standards, is individualized to your personal requirements and develops overtures without initiative on your part. Your identity covered and present position protected. Send only name and address for details.

R. W. BIXBY, INC.
117 Dun Bldg., Buffalo 2, N. Y.
TF

MILLWRIGHT SUPERVISOR

Fox River Valley, Wisconsin, paper mill has opening for ambitious young man with technical training and practical experience in millwright work. Will be understudy to boss millwright who has crew of 40 to 50 men. Plenty of opportunity for advancement. Replies confidential. Write Box 50-474 care Paper Trade Journal. O-26

WORKING SUPERINTENDENT for small, fast growing Eastern mill making lightweight specialties. Cylinder machine experience essential. State qualifications and salary expected. Address Box 50-378 care Paper Trade Journal. TF

WANTED—NIGHT BOSS for a one machine board mill. Must be experienced in the manufacture of jute liner and container chip. Mill located in the Middle West. Excellent salary and many employee benefits. Address Box 50-482 care Paper Trade Journal. O-26

TOUR BOSS—Experienced cylinder machine tender qualified to handle position. Rotating shifts. Mill located in Massachusetts. In reply give all details. Address Box 50-497 care Paper Trade Journal. N-2

WANTED—Machine Tenders, Back Tenders and Tour Bosses, for cylinder board machine, making test liner and folding boxboards. Plant located in middle west. In reply give full details, including experience, references, salary. Address Box 50-502 care Paper Trade Journal. O-26

SOUTH AMERICA—Machine Tender, under 35, wanted for mill in Peru—both Fourdrinier and cylinder machine experience desirable but not essential—good opportunity for advancement—give experience and family status. Address Box 50-522 care Paper Trade Journal. N-16

FOREMAN, Ink Department—Supervisor of Ink Department in a paper converting company; experience and knowledge desired includes color matching; formulation and manufacture of letter press, gravure and aniline inks. Salary open. Address Box 50-524 care Paper Trade Journal. O-26

PERSONNEL SERVICE ASSOC., 115 State St., Springfield, 3, Mass. Specialized Confidential Placement Service for the Paper and Allied Industries. Inquiries from employers and employees always welcome. O-26

RATES FOR CLASSIFIED ADVERTISING

HELP WANTED—10c a word. Double rate for heavy face type. Minimum charge $2.50.

SITUATIONS WANTED—10c a word, double rate for heavy face type. Minimum charge $2.50. If repeated ½ rate will be charged for each consecutive repetition.

FOR SALE—10c a word. Double rate for heavy face type. Minimum charge $2.50.

WANTED—10c a word. Double rate for heavy face type. Minimum charge $2.50.

OPPORTUNITIES—10c a word. Double rate for heavy face type. Minimum charge $2.50.

Classified advertising space may also be purchased at $5.00 per single column inch. All classified advertisements are payable in advance.

If box number is used—70 cents additional.

Address replies to advertisements appearing under Box Numbers in care of PAPER TRADE JOURNAL, 15 West 47th Street, New York 19, N. Y.

SITUATIONS WANTED

EXPERIENCED
KRAFT PULP AND PAPER MILL ENGINEER AND OPERATOR

wants to contact mills.

Cement Sacks, Gumming, Envelopes and other Specialties.

Address Box 50-439 care Paper Trade Journal. N-2

SUPERINTENDENT 25 YEARS PRACTICAL EXPERIENCE manufacturing folding boxboard and high grade light and heavy weight specialties from sulphite, sulphate, groundwood and old paper stock. Aggressive, capable man, good references. Address Box 50-518 care Paper Trade Journal. N-16

UNIVERSITY GRADUATE with 18 years experience in the pulp and paper industry as purchasing agent, engineer and executive, desires position with progressive company. Write Box 50-519 care Paper Trade Journal. N-9

SITUATIONS WANTED

Available—To pulp and paper or allied industry. Several years technical and sales experience in pulp and paper industry. M.S. in pulp and paper manufacture. Excellent record and references. Immediate reply essential. Address Box 50-520, care Paper Trade Journal. O-26

COLLEGE GRADUATE (E.E.) with public liability safety experience with insurance company, wants to make paper manufacturing his life work. Willing to begin at bottom with maintenance crew. Address Box 50-503 care Paper Trade Journal. O-26

EXECUTIVE ENGINEER experienced in all phases of pulp and paper manufacture with extensive experience in dry creped tissue field, desires position in engineering or management. Address Box 50-515 care Paper Trade Journal. N-2

SITUATIONS WANTED

PLANT MANAGER—Manufacture and conversion of boards and papers; wants change for greater opportunity. Competent and successful in organization; production; and labor relations. Address Box 50-521 care Paper Trade Journal. N-30

SHIPPING & TRAFFIC MANAGER will be available soon. Has over ten years experience in paper field. Excellent record and background. Capable of administering all phases of material handling. Complete resume on request. Address Box 50-526 care Paper Trade Journal. O-26

ASSISTANT SUPERINTENDENT or Foreman with 20 years experience in converting specialty papers. Can handle help, get quality and production. Best of references. Address Box 50-530 care Paper Trade Journal. TF

SUPERINTENDENT—With a long record as a Practical Paper Maker on Modern High Speed Cylinder Machines, making Boxboards and Specialties. A production man with an engineering background. Address Box 50-529 care Paper Trade Journal. N-9

FOR SALE

ROSS PAPER MACHINERY CO.
265 PASSAIC STREET
NEWARK 4, N. J.

CONVERTING PAPER MAKING EQUIPMENT

NEW USED REBUILT PAPER AND PULP MACHINERY

AMERICA'S LARGEST BUYERS OF PAPER MAKING MACHINERY

BEATERS
1—Dayton High Speed—iron tub—60 tons per day.

BELTING—NEW
87 feet 8" 13 ply Goodyear Rubber Belting.
553 feet 8" 4 ply Silver Duck Transmission belt.
177 feet 10" 6 ply Silver Duck Transmission Belt.

BLOWERS
8—Blowers and Mill Exhausters.

CALENDER ROLLS
46 Chilled Iron Rolls—Assorted sizes.

CALENDER STACKS
1—112" face 7 roll.

CONVEYOR
1—18½ ft. long x 30" wide—with motor.

CORE CUTTERS
1—Cameron with 1" x 1½" mandrels.

CYLINDER MOLDS
1—134" face x 36" diameter, with stainless steel shafts.

DRIVES—ENCLOSED HERRING BONE GEAR
4—Falk right angle 75 hp—ratio 6.31-1.
1—Falk right angle 255 hp—ratio 7.14-1.
1—Falk straight 275 hp—ratio 1.97-1.
1—Falk straight 255 hp—ratio 3.12-1.
Above complete with clutch pulley.

DRIVES—ENCLOSED DIRECT MOTOR CONNECTED
2—Falk 15 hp—ratio 38.6-1 with motor.
2—Falk 7.5 hp—ratio 23.4-1 with motor.
1—Falk 7.5 hp—ratio 45.1 with motor.
2—Falk 5 hp—ratio 63.1 with motor.
Above complete with panel controls, D. C. Generator and converter.

DRYERS
5—143" face x 48" diameter.
5—124" face x 48" diameter.
3—90" face x 36" diameter.
1—77" face x 48" diameter—with gear.
1—64" face x 36" diameter.
1—128" face x 16" diameter—Baby Dryer.
56—126" face x 42" diameter.
4—96" face x 36" diameter.
1—102" face x 48" diameter, with bearings.
4—100" face x 48" diameter—with gears and bearings.
3—110" face x 42" diameter with bearings and gears.
1—117" face x 48" diameter.
1—54" face x 36" diameter.

ELECTRIC PAPER MACHINE DRIVES
1—G. E. 55/110 with G. E. Generator, Exciter and Controller.
1—G. E. 90/100 with G. E. Generator, Exciter and Controller.

FILTER PRESS
1—New Sperry filter press, size 12, type 41.

FOURDRINIER SECTIONS
1—P & J 156" x 80 ft. ball bearing. Complete from inlet to 22" diameter suction couch. Brass and Rubber covered table rolls. 6 Brass Suction Boxes operated at 1000' per minute.

JORDANS
1—26 Miami, for motor drive.
3—Jones Majestics with base and couplings—
2—#3 Appleton with base and coupling.
1—Jones Majestic. Stainless Steel Filling.

LAMINATOR
1—Downingtown 52" Laminator.

MOTORS
1—Reliance 25 h.p. ball bearing, 550 v., 3 phase, 60 cycle—1750 r.p.m.

PULLEYS
30—Split cast iron tapered Pulleys.

PULP EQUIPMENT
1—Mitts & Merrill #17 Pulpwood chipper.
1—Trimbey pulp screen with scraper.

PUMPS
44—Centrifugal Pumps, open & closed impellers. Direct connected or Belt Driven. Extended base for motor. Assorted capacities and heads. Most used less than one year. Also new Gould Pumps.
1—Worthington Sump Pump—75 g.p.m. 60' head with General Electric 2 h.p. 220-440 v. motor.
1—Worthington Sump Pump—1500 g.p.m. 15' head with General Electric 7½ h.p. 220-440 v. motor.

REDUCERS
1—Link Belt 40 h.p. Ratio 2.2-1, 500 r.p.m.-227 r.p.m.
1—Falk 25 h.p. Ratio 300-1, 900 r.p.m.-3 r.p.m.

REELS
1—Beloit 132" two bowl upright reel.
1—Beloit 116" two bowl upright reel.

ROLLS—PRESS, COUCH, etc.
32—Press rolls, brass and rubber covered.
14—Couch rolls, brass and rubber covered.
250—Brass and steel carrying rolls.

ROTARY SCREENS
1—#2 Leith-walk-ball bearing.
2—#2A Bird with Copper vats, enclosed drive.

SCREW PRESSES
1—Valley Voith Screw Press Size 2A, with new spare sets of plates.

SHEETERS
1—Finlay 90" with 6 roll back stand, motor and 4 slitters.
1—42" Dillon with 5 roll backstand.
1—48" Kidder Spot Sheeter.
1—Beloit 72" Heavy Duty Duplex Sheeter.

SHREDDERS
1—American 32" Hamermill, anti-friction bearing.
1—Sprout Waldron Cutter—type F-11—30" knives. Used 30 days.

SLITTERS AND WINDERS
1—Pusey & Jones 160" high speed slitters and rewinders.
1—Langston 40" with motor and 25 sets shear cut slitters.

STUFF PUMPS
1—Shartle 8½x12 Triplex—Silent Chain Drive
1—Shartle 10 x 20 Triplex.

SUCTION COUCH ROLLS
1—Millspaugh 22" diameter x 138¾" eyelet face.
1—Millspaugh 22" diameter x 158" drilled face.
1—Millspaugh 95" drilled face x 22" diameter.
1—Beloit 84" face x 18" diameter—ball bearing.

SUCTION PRESS ROLLS
1—Millspaugh 131" drilled face x 22" diameter with stand & drive.

SUPERCALLENDERS
1—66" Perkins 7 roll—with all electric equipment.

THICKENERS
1—88" Thickener—new wood vat.
1—Bird Thickener Iron End Vats—Cylinder 72" face x 42" diameter, with Shower and Felt take off roll.
1—IMPCO 92" face x 42" diameter ball bearing cylinder—18" rubber couch—iron end vat.

TRIMMERS
1—62" Oswego.

VATS—STAINLESS STEEL
2—Dual Flow Stainless Steel vats for cylinders 48" diameter x 183" face—with stands for couches.

VACUUM PUMP
1—#4 Nash Hytor with 10 h.p. motor.

WET MACHINES
1—84" Wet machine—new vat.

MACHINERY WANTED
For outright purchase—
Paper Machines, Paper Mill Machinery and Converting Equipment.

FOR SALE

CAMERON SLITTERS

1—84" Type 10—Model 14. Late Type.

1—72" Type 9-S.

1—62" Shear cut, Type 6.

1—62" Type 6.

1—42" Universal Type 6.

1—42" Type 26, Model 2A.

1—32" Type 40, Model 2A.

1—65" Kidder Late Type Super Speed Junior Model Shear Cut Slitter & Rewinder.

1—62" Waldron Shear Cut Slitter & Rewinder.

1—42" Johnstone Twelve Slitter & Rewinder.

1—Brand New 82" Johnstone Fourteen.

1—30" Fales Standard Model B Slitter & Rewinder.

1—30" Type A Langston Shear Cut Slitter & Rewinder.

POWER PAPER CUTTERS:

5—Seybold, 1—40" 10Z, 1—54" Holyoke, 1—54" 20th Century, 1—60" 20th Century, 1—72" 20th Century, 2—Oswego, 44" and 57", 1 Sheridan, 1—50", 2—Acme, 32" and 42", 1—S&W Undercut, 63".

1—Hudson-Sharp 3 deck 10 x 10 Napkin Folding Machine. ¼, ⅛ & ⅛ Fold.

1—McCade Mfg. Co.'s facial tissue paper folding machine with AC motor. Production 40 to 50 gross in 8 hours. 400 count. 8" x 10".

2—81" Dietz Toilet Paper Perforators. Sheets 4⅝ x 4½ and 4½ x 5 and paper towels perforated 7½ and 13⅝".

1—81" Hudson Sharp Toilet Perforator.

1—Paper Converting Machine Co. ¼ fold, 2 web napkin folder with embossing attachment. Extra Embossing rolls.

1—Pickett Garment Bag Machine, making bags 36" and 54".

8—Potdevin Bag machines with two color printing units. 1—Type 293, size 9693-303, flat and square bags. 4—Type 212 Size 9112-301, satchel bottom and flat bags. 3—Type 91 P&S Size 1, Flat and square bags.

2—Lockport Flat & Square Bag Machines. One #2; one #3.

1—20" Champlain 4-color Rotogravure Press.

1—32" 3-color Aniline Printing Press for tailprinter on a Bag Machine.

2—Duplex Sheeters, 1—64" Dillon and 1—94" Moore & White.

1—94" Dillion Duplex Rotary Sheet Cutter, with 24 roll back-stand and Brannan Ream Folder.

1—52" Hamblet Single Rotary Sheet Cutter.

1—36" Standard Beck Rotary Sheeter.

1—81" Hudson-Sharp Embossing Machine.

1—45" German Dornbusch Embossing machine with two sets of embossing rolls.

1—38" Holyoke Roll to Roll Embosser. Heavy Type. Two New Steel Rolls and One New Paper Roll.

1—72" & 1—84" Miami Lo-Type Waxing Machines.

1—80" Potdevin Waxing Machine. Model 79.

2—46" Waldron Brush Coating Machines complete with drying ovens, festoon equipment, rack and so forth.

1—Lawtomatic Wrapping Machine for 11" Paper Towels.

1—#3A Hudson-Sharp Rotary Aniline Printing Press, roll to sheets, 18½" wide. Variation in sheet lengths 24" to 28".

3—Noble & Wood Mammoth Jr. Jordans. AC motors, direct connected.

1—Electric operated Mennich Baler. Makes bales 24x64x60.

GIBBS-BROWER COMPANY, INC.

Reply to Room 903

21 East 40th St., New York 16, N. Y.

O-26

FOR SALE

Of Interest to Paper Mills

We own and offer:

68" Oswego hand clamp mill-type Power Cutter, with power back-gauge.
38" Acme late model & 40" C — P Power Cutters.
65" Hamblet Sheeter with layboy.
100" Horne Sheeter with back-stand.
58" Finley Sheeter.
46" Kidder model CH Slitter.
32" Cameron model 24-3A Slitter.
36 x 48 Kidder one-color Rotary Wrapping Paper Press.
12 x 26 Kidder Bed & Platen Press.
No. 1¼ Cottrell 3-color Bag Press.
Balers—both new and used.
Large Quantity Newspaper & Stereo Equipment.

THOMAS W. HALL COMPANY, INC.
120 West 42nd St., New York 18
(Plant at Stamford, Conn.)

TF

PAPER COATING MACHINERY MANUFACTURERS — Waxing, Oiling, Carbon, Laboratory Coating and Treating and Flat Ream Measuring and Converting Machines. New improvement. THE MAYER MACHINE COMPANY, INC., 1313 Buffalo Road, Rochester, 11, N. Y. TF

OFFERED SUBJECT TO PRIOR SALE

10,000 lbs.—7½" rolls
2,000 lbs.—37½" rolls
5,000 lbs.—41" rolls
12 lb. Natural Kraft Tissue

In original wrappings—perfect condition —not "seconds" or rejects. Inquiries to Box 50-513 care Paper Trade Journal.

O-26

PROFITABLE RAG BUSINESS

FOR SALE OR LEASE

Complete sorting dept. and remnant store. Excellent opportunity! Selling account death of owner. Write:

NEW ENGLAND RAG COMMISSION
Cohoes, New York

O-26

FOR SALE

1—Fourdrinier machine. Wire 110" x 60' 22" suction couch, two main presses, 29 dryers 48x109, one calender stack, one two-spool reel. Bevel mortise gear drives.

Address Box No. 50-500 care Paper Trade Journal. O-26

FOR SALE
PMC DIE CUTTER

Unused. Perfect condition.

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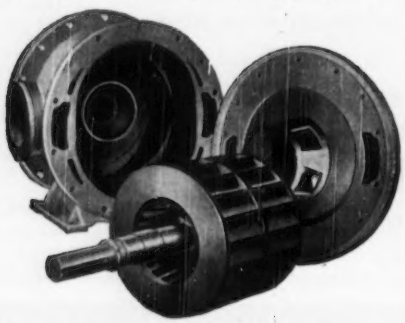

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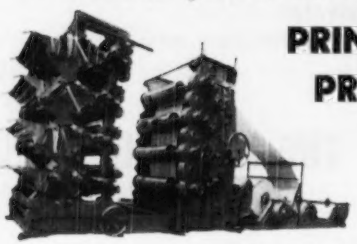

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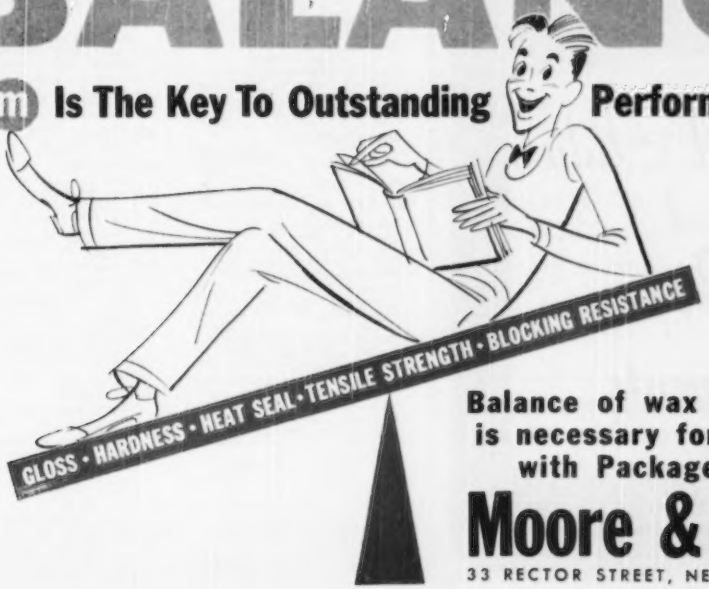

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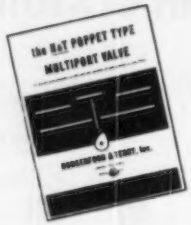

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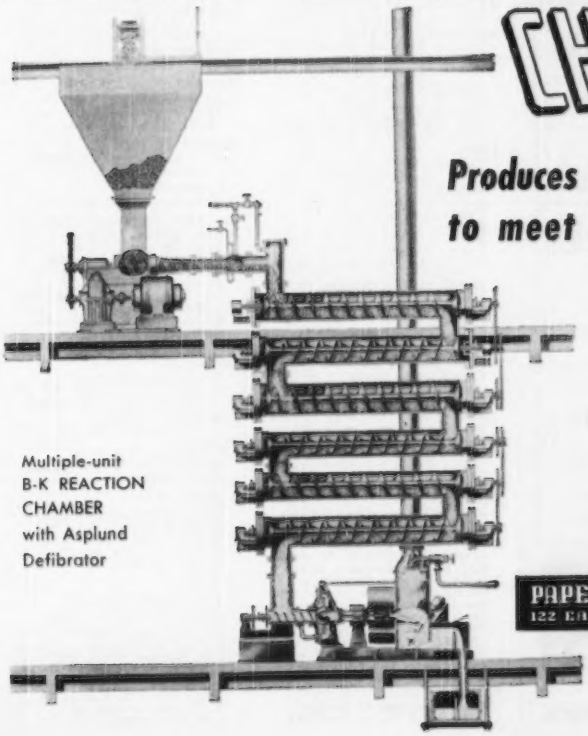

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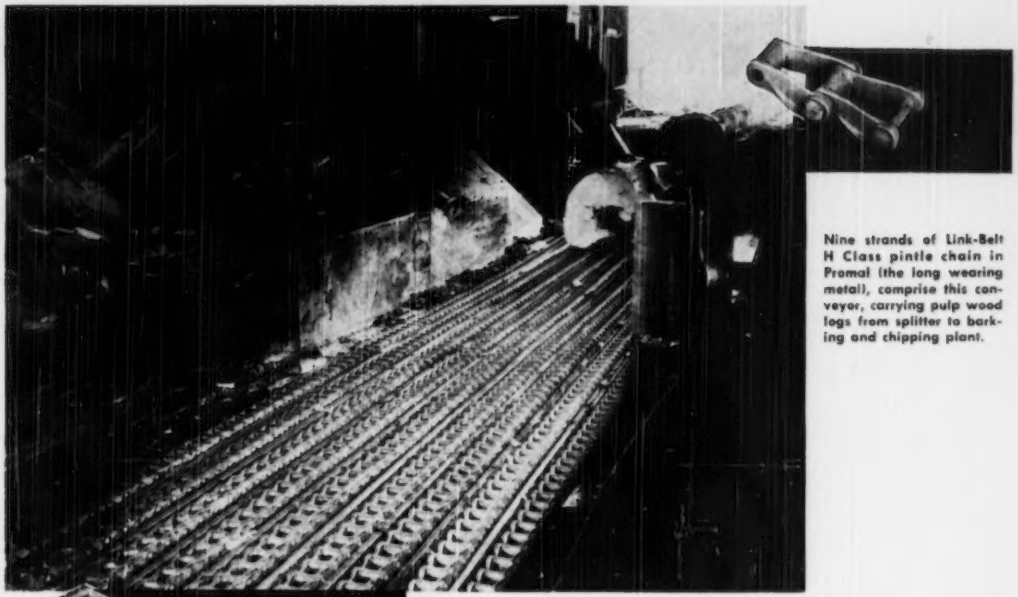

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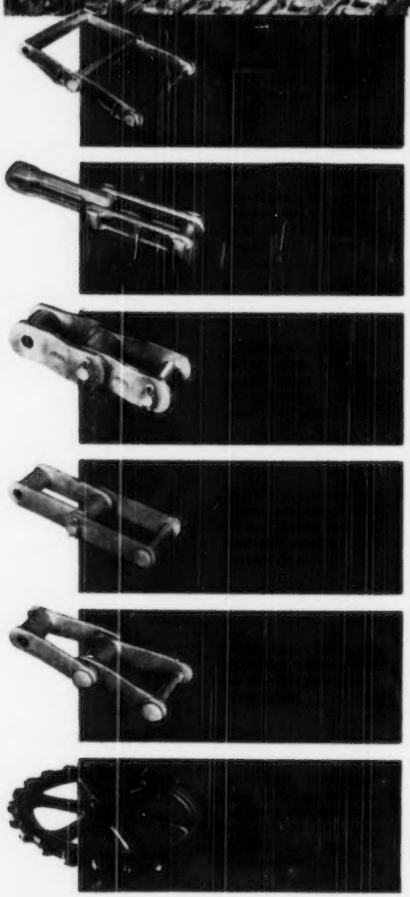

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